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REPORT

OF THE

COMMISSIONERS

APPOINTED TO INQUIRE INTO THE

REGULATIONS AFFECTING THE SANITARY CONDITION OF THE ARMY,

THE

ORGANIZATION OF MILITARY HOSPITALS,

AND THE

TREATMENT OF THE SICK AND WOUNDED;

WITH

EVIDENCE AND APPENDIX.

Presented to both Houses of Parliament by Command of Her Majesty.

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COMMISSION.

VICTORIA, by the grace of God of the United Kingdom of Great Britain and Ireland, Queen, Defender of the Faith,

To Our right trusty and well-beloved Councillor, the Right Honourable Sidney Herbert; and to Our trusty and well-beloved Augustus Stafford Stafford, Esquire; Sir Henry Knight Storks, Knight Commander of the Most Honourable Order of the Bath, a Colonel in Our Army, and Secretary for Military Correspondence in Our War Department; Andrew Smith, M.D., Director-General of Our Army Medical Department; Thomas Alexander, Companion of the Most Honourable Order of the Bath; Sir Thomas Phillips, Knight; James Ranald Martin, Esquire, F.R.S.; Sir James Clark, Baronet, M.D.; and John Sutherland, M.D.; greeting.

Whereas it hath been humbly represented to Us that, considering the great importance of maintaining and improving the health of all ranks of Our Army, at home and abroad, and of providing for their medical care and treatment in cases of disease, wounds, and other casualties whatsoever, in the most approved manner, it is expedient that certain inquiries should be made into the constitution of the Medical Department of Our Army, the mode of appointment of its officers, and the system which regulates their rank, pay, promotion, and retirement; likewise it is further expedient to examine into the condition and administration of the Hospitals of Our Army, with a view to their increased efficiency.

Now know ye, that We, having taken into Our consideration the premises, do hereby order and direct you the said Sidney Herbert, Augustus Stafford Stafford, Sir Henry Knight Storks, Andrew Smith, Thomas Alexander, Sir Thomas Phillips, Sir James Clark, James Ranald Martin, and John Sutherland, to inquire into the organization, government, and direction of the Medical Department of Our Army.

And firstly, to inquire into the mode by which candidates for first Commissions are selected, and the system adopted for their promotion and routine of service; also the mode adopted in regard to their pay and retiring allowances.

And further, We do order and direct you to inquire into the means now adopted for acquiring, keeping up, and adding to the professional knowledge of the officers of Our Medical Department, and to consider whether it will be expedient to encourage them to combine civil practice where compatible with military duty.

And further, We do order and direct you to inquire into the operation of the regulations now in force, with a view to the prevention of disease in Our Army, both at home and abroad, as regards barrack accommodation, encampments, clothing, rations, and other matters relating thereto, having regard to the various climates to which Our troops are exposed, and the duties and responsibility of the medical authorities on these matters.

And further, We do order and direct you to inquire into the state and condition of military hospitals, both general and regimental.

Also into the system adopted in the same, for the treatment of Our soldiers, and the powers possessed or exercised by the Medical Superintendents or other functionaries in such hospitals, for providing diet, medicines, and every requisite for the medical and surgical treatment of the patients under their charge, together with the character of the diet, medical comforts, furniture, and other hospital supplies.

Also, We do further direct you to inquire generally as to the expenditure of such hospitals, and the financial control now exercised in and over the same, and the relative authority of the various departments whose functions are exercised within the hospitals.

And further, We do order and direct you to inquire into the rules and regulations, or the practice, in force for invaliding and discharging the soldiers of Our Army, when brought forward for discharge, as unfit for future service.

And further, We do order and direct you to inquire into the system of management and treatment of and the provision made for, patients in civil hospitals, whether in immediate connection with Our Army or otherwise, and to consider whether such management or treatment, or any portion thereof, can be introduced with advantage in the Medical Department of Our Army.

And We further order and direct you to inquire into the expediency of making provision in Our military hospitals for the officers of Our Army suffering from disease or accident incurred in Our service, and to consider whether it will be advisable to provide in Our military hospitals for the treatment and cure of lunatic officers or soldiers, or to establish a separate military hospital or hospitals for that purpose, or in any other manner to provide for the treatment of such cases.

And We do further command and require you to report what changes you may consider it expedient to make in the organization, management, and expenditure of the Medical Department of Our Army, with a view to the utmost efficiency of this branch of Our military service, and what measures you may recommend to be adopted, with a view to the preservation of the health of Our troops at home and abroad; and also that you do report your opinion upon such returns or records as should be kept by the medical officers of Our Army, with a view to the preparation of a well digested and accurate body of military medical statistics.

And it is Our further will and pleasure that you, or any five or more of you, do obtain information touching the matters aforesaid by the examination of all persons most competent, by reason of their knowledge, habits, or experience to afford it, and also by calling for all documents, papers, or records which may appear to you, or any five or more of you, calculated to assist your researches and to promote the formation of a sound judgment on the subject, and that you, or any five or more of you, do report to Us, under your hands and seals, your several proceedings, by virtue of this Our Commission, together with your opinions touching the several matters hereby referred for your consideration.

Given at Our Court at St. James's, this fifth day of May, in the year of Our Lord one thousand eight hundred and fifty-seven, and in the twentieth year of Our reign.

By Her Majesty's Command.

(Signed) PANMURE.

REPORT.

We, Your Majesty's Commissioners, appointed to inquire into the sanitary condition of the British army, the state of the army hospitals, and the rank, pay, emoluments, and efficiency of the Army Medical Department, and to report what measures we think advisable for the prevention of sickness and the treatment of disease in Your Majesty's forces, have diligently inquired into the various subjects to which our attention was directed; and we now humbly submit to Your Majesty's consideration the results of those inquiries, and the conclusions we have drawn from them, together with the practical recommendations which we think it our duty to propose.

With a view to ensure method in our investigations we have classed under several heads the various matters into which, by the terms of Your Majesty's Commission, we were directed to inquire.

The classification we have adopted is as follows:—

1. The operation of the regulations now in force, with a view to the prevention of disease in the army, both at home and abroad, having regard to the various climates to which the troops are exposed, and to the duties and responsibilities of the medical authorities on these matters, particularly with reference to,—
   - Barrack accommodation.
   - Encampments.
   - Rations.
   - Clothing, and equipments.

2. The state and condition of the military hospitals, both general and regimental, including the powers exercised by the medical superintendents and other functionaries in such hospitals for providing the diet, medicines, and every requisite for the treatment of the patients; the character of the diet and other hospital supplies; the expenditure of military hospitals, and the financial control now exercised in and over the same; the organization and equipment of field hospitals; the relative authority and distribution of the duties of the various officers within the hospitals; the expediency of making provision in military hospitals for the accommodation of officers of the army suffering from disease or accident incurred in the service, and for the treatment and cure of lunatic officers or soldiers.

3. The system of management, and the provision made for patients, in civil hospitals; and whether such management, or any portion thereof, can be introduced with advantage into military hospitals.

4. The returns or records which should be kept by army medical officers, with a view to the preparation of well digested and accurate military medical statistics.

5. The invaliding and discharging soldiers when brought forward as unfit for further service.

6. The position of the army medical department, as regards,—
   - Education of medical officers, including,—
     - The qualifications of candidates.
     - The nature of their examinations.
     - The means of acquiring, keeping up, and adding to their professional knowledge.
   - Promotion.
   - Routine of service.
   - Relative rank and allowances.
   - Pay and retirement.

7. The constitution and organization of the office of Director-General of the Army Medical Department.

Upon most of these heads there exists a large amount of information in the Report and Evidence of the Commission upon the state of the Army Hospitals in the East; the Commission of Inquiry into the Supplies for the British Army in the Crimea; the Report of the Sanitary Commissioners to the Army in the East; the Parliamentary

Committee on the Medical Department of the Army, of which Mr. Augustus Stafford, M.P., was chairman; and the Statistical Reports on the sickness, mortality, and invaliding among the troops, presented to Parliament in 1838-9-40-1 and 53.

To these documents we have frequently referred in the course of our inquiry; and much of the evidence contained in them we shall have to quote in support of our conclusions and of the recommendations which we are about to offer.

We have, however, on all the matters submitted to us, examined witnesses whose experience and capacity appeared likely to assist and direct our judgment, and whose standing would give to their opinions on the subjects on which they were expressed the greatest weight and authority.

We begin with the most important part of the whole subject into which we have been instructed to inquire, namely, the powers vested in the Army Medical Department for the prevention of disease among the troops, both at home and abroad, and the operation of the regulations now in force for that purpose.

But before entering upon any consideration of the measures heretofore taken, or those which should in future be taken, to secure the health of the troops, whether in peace or war, the sufficiency or insufficiency of the former should be tested by the results produced. If the troops be habitually in the enjoyment of as good health as the rest of your Majesty's subjects, a state of things so satisfactory would seem to preclude the necessity of any further inquiry into the subject.

Rates of Mortality in the Army.

No principle in vital statistics is better established than that the rates of mortality differ widely among different ranks, classes, and occupations, and that such difference is permanent, when arising from permanent causes.

It seemed to us, therefore, important to ascertain the rates of mortality incidental to the soldier's life, as compared with those of trades in which men of the same class and the same age are usually engaged, and the conditions of which bear the greatest resemblance to his own occupation.

We must, however, premise that the army rate of mortality cannot be correctly calculated from the deaths per 1,000 of the troops during the period they are serving, because every year a certain per-centage of the force is invalided and pensioned, on account of disease contracted in the service; and of men so pensioned, a large per-centage die during the first year. The health of the army, as given in the returns, is therefore more favourable in appearance than in reality, on account of the constant discharge from its ranks of men in an advanced stage of disease, as we shall presently show.

Appendix No. lviii. (1.)

But if the rates of mortality of the soldier, even with this qualification, exceed those of the classes with which he is compared, then the causes of that excess should be investigated, and the means of removing them, or, if removal be impossible, of mitigating their intensity, be sought.

The soldier is recruited generally at 19 years of age. He is drawn from two classes, the agricultural labourer and the working class in towns. He is carefully inspected by a surgeon, who rejects every man having any bodily infirmity, or bearing signs of future disease. Although the soldier's is therefore a picked life, we propose, before contrasting the rates of the mortality to which he is subject with those of some special classes and occupations, to compare them with those of the male population generally at corresponding ages throughout England and Wales, as stated by the Registrar-General.

The following table shows the strength and the mortality of the officers and men of the army serving both at home and abroad, from 1839 to 1853, exclusive of the artillery, engineers, and colonial corps, as given in a return furnished by the Adjutant-General,

compared with that of the civil male population between the same ages; first, in country districts alone, and secondly, in town and country, in England and Wales, as given by the Registrar General; and the rates of mortality per 1,000 men in each case.

Years.	Cavalry, Guards, and Infantry, exclusive of Royal Artillery and Engineers, West India and Colonial Corps.			Annual Mortality to 1,000 of the Civil Male Population of the same Ages as the Soldier living in Healthy Districts, 1849–1853.	Annual Mortality to 1,000 Males of the same Ages as the Soldier in the General Population of England and Wales, 1849–1853.
	Non-commissioned Officers and Men.				
	Effectives, average Strength.	Total Deaths.	Ratio per 1,000 Men.		
1839	98,912	2,914	29·5		
1840	107,539	3,300	30·7		
1841	111,134	4,167	37·5		
1842	115,186	5,052	43·9		
1843	118,543	5,270	44·5		
1844	119,334	3,867	32·4		
1845	118,071	4,587	38·8		
1846	120,644	5,125	42·5	7·7	9·2
1847	127,245	4,232	33·3		
1848	127,921	3,213	25·1		
1849	123,673	4,052	32·8		
1850	119,111	3,119	26·2		
1851	116,830	2,729	23·4		
1852	118,623	3,120	26·3		
1853	119,271	3,392	28·4		
	1,762,037	58,139	33·0		

That is to say, that whereas the deaths on the general English male population at the army ages during the fifteen years from 1839 to 1853, calculated at the annual average of 9·2 per 1,000, would have been 16,211, the deaths in the British army at home and abroad were 58,139, being an excess of deaths among soldiers of no less than 41,928.

The results shown by this table are further explained by the Diagrams C. and D., in Appendix No. lxxii. by which the difference in the mortality of the population, both in England and Wales generally and in healthy districts, is illustrated.

It may, however, be fairly objected to this comparison that the civilians in England are living in their own country and in a temperate and healthy climate; whereas a large portion of the army is serving in every part of the globe, and is exposed to every vicissitude both of temperature and climate.

The following tables are free from that objection, and show the comparative mortality of the army at home, and of the male civil population of England and Wales, between the same ages as the soldier, irrespective of the occupations in which they are engaged, and of the healthiest and unhealthiest portions of it, as stated by the Registrar General.

Rates of Mortality per 1,000 *per annum.*

Effective men of all ages of the Army at home:

Total	17·5*
Household Cavalry	11·0
Dragoon Guards and Dragoons	13·3
Foot Guards	20·4
Infantry of the Line	18·7

Population of England and Wales, army ages:

Town and country population	9·2
Country alone	7·7

One of the unhealthiest towns, army ages:

Manchester	12·4

* The cause of the difference between these numbers and those given in the Army Statistical Report is, that the above are corrected for the numbers in the service at different ages.

Rates of Mortality per 1,000 *men of the Army at home, and of the English civil male population, at corresponding quinquennial periods, as stated by the Registrar General.*

Ages, 20 to 25,	Civilians	8·4
	Soldiers	17·0
25 to 30,	Civilians	9·2
	Soldiers	18·3
30 to 35,	Civilians	10·2
	Soldiers	18·4
35 to 40,	Civilians	11·6
	Soldiers	19·3

From this it appears that if the army at home were as healthy as the population from which it is drawn, soldiers would die at one half the rate at which they die now.

The results of this table are illustrated by Diagram B., Appendix lxxii.

But, as we have already observed, the soldier's is a picked life. All men offering to enlist, who bear signs of physical weakness or of tendency to disease, are rejected, and even after acceptance can be discharged on the representation of the regimental surgeon at any period within three years from their admission; and all these rejected lives are thrown back on the civil population.

A paper marked No. lxvi. in the Appendix, shows the number of men rejected by the staff surgeons, and how large a proportion of those deemed unfit are rejected on account of disease or infirmity tending to shorten life. Were such persons admitted into the service, the chances of the civilian and the soldier would, at the outset of their career, be the same as regards the probable duration of life, but the rate of mortality of the soldier would be increased.

On the other hand, the apparent health of the army is maintained by the continued influx of fresh lives in the place of those which are weeded out by the process of invaliding, by which means a large number of men whose physical powers are exhausted are thrown back on the civil population, while their removal lowers the rates of mortality of the army, though their deaths are owing to the military service which first undermined their health.

Thus, if all corps were exposed to the same risks, and the invaliding in each were conducted on the same principle and with the same degree of stringency, the rate of mortality would be low in each arm of the service in proportion as the invaliding is high, and *vice versâ;* and the rate of mortality among the invalids themselves would be highest where the amount of invaliding was the lowest, and *vice versâ.* The following table, however, shows that, owing to different disturbing causes, the results produced are at variance with the rule above stated.

See App. lviii.

	Annual Ratio discharged by Invaliding per 1,000 serving.				
	Under 7 Years' Service.	7 to 14 Years' Service.	14 to 21 in Infantry, and 24 in Cavalry.	Total under 21 or 24 Years' Service.	Above 21 or 24 Years' Service.
Household Cavalry	6·2	13·6	35·1	15·2	531·3
Cavalry of the Line serving at home	14·7	23·5	36·7	20·9	739·0
Foot Guards	14·3	16·1	20·0	15·9	331·4
Infantry of the Line serving at home	15·9	21·1	55·6	20·8	987·0

Clearly, if every man likely to die could be invalided, the army would appear to be almost immortal; and in the same proportion that death can be anticipated by discharge, the rate of actual mortality in the ranks will be diminished.

To the state, the loss of the men by invaliding is the same as the loss by death. In either case the expense of obtaining and training a substitute must be incurred, and in either case the death of the man, whether he be a soldier in the receipt of pay, or an invalid in the receipt of pension, is equally attributable to military service.

It is obvious, therefore, that the rates of mortality, taken alone, represent a part only of the loss annually caused in the ranks of the army by disease.

To institute a fair comparison of the effects produced on human health and life of an average character by military service, as compared with civil occupations, an estimated amount of mortality should be added to the army rates for those who from sickness or conscious inability do not offer themselves, or who offer themselves and are rejected on examination for enlistment; and the death of invalids and pensioners should be transferred to the army rates from the civil rates in which they are now included.

The civil population, however, even under this mode of comparison, would still include deformed persons, idiots, lunatics, and those dregs of the population whose habits are such as to preclude the possibility of their offering themselves for military service, and indeed unfit them for any occupation.

We have been enabled to institute some comparisons between the rates of mortality of the soldier and those of civilians of different classes and occupations, the materials of which, so far as civil life is concerned, have been placed before us by Mr. Neison.

It must be borne in mind that a great part of the soldier's duty is performed in the open air; that he receives, as compared with the agricultural classes, an ample supply of food, is well clothed, and is housed at a considerable expense.

In all these respects, looking at his material position alone, his condition at first sight appears to resemble that of the agricultural labourer, though the latter has disadvantages from which the soldier is secured. If the agricultural labourer, not being a member of a friendly society, falls sick, he forfeits his wages, which are his only means of subsistence. His medical treatment is not lavish, nor the attendance in all cases immediate. If he be a member of a friendly society he has better attendance, and his sick pay puts him beyond the reach of privation.

To the soldier the government stands in the place of the friendly society. If he be ill, however slight the malady, he at once goes to hospital and has all the treatment and all the nourishment which his case may require.

Materially speaking, therefore, the life of the soldier at home (and in the following comparisons we are speaking only of the troops in the United Kingdom) and that of the agricultural labourer who is a member of a friendly society would seem to be open to a fair comparison.

The tables contained in the able paper by Mr. Neison, marked lxxi. in the Appendix, show, however, that within corresponding ages the— See App. lxxi.

Mortality of the	Household Cavalry is	$= 1\frac{4}{5}$	times as great as the mortality of agricultural labourers being members of friendly societies;*
,,	Dragoons, &c.	$= 2\frac{1}{5}$	
,,	Line - - -	$= 2\frac{9}{10}$	
,,	Guards - -	$= 3\frac{1}{3}$	

which is only 6·056 deaths per annum in 1,000 as against 11·1 per 1,000 in the Household Cavalry, 13·5 in the Dragoons, 17·9 in the Infantry of the Line, and 20·4 in the Foot Guards.

But it may be objected, that though the soldiers' are originally picked lives, and though the government secures to them the same advantages as those provided for

* In these comparisons with various civil occupations or societies, it must be remembered that the persons engaged in them frequently withdraw, thus reducing the rates of mortality of the occupation which they leave; but against this must be set the discharge and invaliding of soldiers; the withdrawal, however, in the former case being at the will of the employed, in the latter at the will of the military authorities.

their members by friendly societies, yet the moral element in the character of that labourer whose providence induces him to lay by from his wages against the future, gives him an advantage in a comparison with the army taken as a body, without reference to the habits of the individual soldier.

The man who is provident is probably likewise industrious and sober, and his standard of health higher than that of men who have not the same qualities in a like degree. As regards this condition of providence, which is a moral condition, acting on a man's physical state, those soldiers only who are depositors in the Regimental Savings' Bank should be compared with the agricultural members of friendly societies. Unfortunately, however, the statistics of the army do not afford the materials for instituting such a comparison, though we think it most desirable that in future they should be so arranged.

A comparison, however, between the soldier irrespective of regimental savings' banks, and the agricultural labourer irrespective of his being a member of a friendly society, gives these results :—

Mortality of Household Cavalry	$=1\frac{1}{3}$	times as great as the mortality of the agricultural labourer as well those who are as those who are not members of a friendly society, which is 8·002 per 1,000.
,, Dragoons, &c.	$=1\frac{2}{3}$	
,, Infantry	$=2\frac{2}{10}$	
,, Foot Guards	$=2\frac{1}{2}$	

Again it may be said, that though a large part of a soldier's duties are out of doors, yet he himself is for the most part quartered, and the greater part of his time spent in a town; though this does not apply to troops quartered at Aldershot, Shorncliff, or the Curragh, nor at some stations which are almost as much in the country.

A comparison with out-door trades, carried on in towns, gives the following results :—

See Notes VII. & VIII. of Appendix to "Contributions to Vital Statistics."

Mortality of Household Cavalry	$=1\frac{3}{10}$	times as great as the mortality of out-door trades in towns, which is 8·535 per 1,000.
,, Dragoons, &c.	$=1\frac{1}{2}$	
,, Infantry, &c.	$=2\frac{1}{10}$	
,, Foot Guards, &c.	$=2\frac{1}{3}$	

But it may be alleged that much of the soldier's day is spent within barracks; he has his arms, accoutrements, clothing, and barrack-room, to clean; he also spends much of his time in his barrack-room or in the canteen; this brings the soldier within the range of comparison with trades but partially carried on in the open air; this comparison gives the following results :—

See notes V., VI., VII., & VIII. of App. to "Cont. Vit. Stat."

Mortality of Household Cavalry	$=1\frac{3}{10}$	times as great as the mortality of partially out-door trades in towns, which is 8·449 per 1,000.
,, Dragoons, &c.	$=1\frac{1}{2}$	
,, Infantry	$=2\frac{1}{10}$	
,, Foot Guards	$=2\frac{1}{3}$	

It has been attempted to account for this excess by the amount of night duty performed by the soldier on sentry. This, however, in the cavalry and artillery is hardly worth mentioning, in the line is not excessive, and in the Guards amounts at present but to one night in five.

A comparison, however, with printers who work at night, and who moreover work six nights out of seven, gives the following results :—

Mortality of Household Cavalry	$=1\frac{2}{10}$	times as great as that of night printers, which is 9·090 per 1,000 ; *
,, Dragoons, &c.	$=1\frac{4}{10}$	
,, Infantry	$=2$	
,, Foot Guards	$=2\frac{2}{10}$	

If it be alleged that the printer, though he works at night and that constantly, works in-doors, whereas the sentry is exposed to the night-air, the duty of the police affords an almost complete parallel with that of the soldier, except that it is more severe, being more continuous in its hours and recurring more frequently. The sentry duty in the army is regulated in the following manner :—The guard remains on

Q. 5911.

* In the *Times* office, where much care has been bestowed on ventilation, the rate of mortality was 8 per 1,000 for the five years from 1850 to 1854, both inclusive.

duty 24 hours and is divided into three reliefs, each man being two hours on sentry and four hours off; during the four hours' interval he remains in the guard room, and sleeps, if so disposed, on the guard-room bed—an inclined wooden plane at one end of the room. This practice is so far objectionable, that the guard rooms are confined and hot, and the man lies down to sleep in his great coat, which is often wet, and he is frequently roused from his sleep in a state of profuse perspiration to go out into the cold air for his turn of sentry duty. Q. 5913-16.

The police duty is divided into three relays, two for the day and one for the night. The first relay commences duty at 6 a.m., and is relieved at 10 a.m. by the second relay. The first relay recommences duty at 2 p.m., and is again relieved at 6 p.m. by the second relay, whose duty ends at 10 p.m. The night constable begins his duty at 10 o'clock, and continues on his beat without relief till 6 o'clock on the following morning, and that for every night in the week. Q. 6985-9.

The police night duty is therefore far more severe than that of the army, yet the mortality of—

The Household Cavalry = $1\frac{1}{3}$
Dragoons - = $1\frac{4}{10}$
Infantry of the line = 2
Foot Guards - = $2\frac{2}{10}$

} times as great as that of the police, whose rate of mortality is only 8·922 per 1,000.

Even comparing trades who work underground, and by shifts through day and night, such as miners, the result is still unfavourable to the troops, being in—

The Household Cavalry = $1\frac{4}{100}$
Dragoons - = $1\frac{3}{10}$
Infantry of the line = $1\frac{7}{10}$
Foot Guards - = $1\frac{9}{10}$

} times as great as the miners, whose rate of mortality is 10·314 per 1,000.

The results of these comparisons will perhaps be better appreciated when the rates of mortality of all the different classes and occupations compared are placed in juxtaposition in the following table:—

Deaths per 1,000 per Annum at Ages between 20 and 40.

Agricultural Labourers. — Members of Friendly Societies.	Labourers. — Rural Districts. — Whether Members of F.S. or not. —	Out-door Trades in towns requiring great or little Exercise. — Not F. S.	Trades in towns only partially out-door. — Not F. S.	Printers. — Not F. S.	Police. — Not F. S.	Miners. — Not F. S.	Household Cavalry.	Dragoon Guards and Dragoons.	Infantry of the Line.	Foot Guards.	Artillery.
6·055	8·002	8·538	8·449	9·090	8·922	10·314	11·1	13·5	17·8	20·4	—

The occupation which comes nearest to the army as regards its rate of mortality is that of clerks. The close application to business, the sedentary attitude, the want of exercise and of fresh air, render their employment one of the most unhealthy of all extensive occupations.

It seems almost incredible that it should be necessary to have recourse to the most unhealthy occupations in order to institute any comparison in which the rates of mortality shall approximate to those prevailing among your Majesty's troops, for at present the army stands almost at the head of unhealthy occupations in the United Kingdom.

It is true that though these comparisons between the army and various occupations in civil life have been confined to the troops quartered at home, yet, a large proportion of the latter having served abroad, sometimes in unhealthy climates, such as India and the West Indies, many have had the seeds of disease implanted in them during their tropical service. That many of these stations are extremely prejudicial to health is clearly shown

by the following table of the mortality during two periods, extending in most instances between the years 1817 and 1856, the particulars of which are given in No. lxii. of Appendix, and illustrated by diagrams submitted to us by Sir A. Tulloch.

Stations.	Antecedent to 1837. Period of Observation.	Antecedent to 1837. Annual ratio of mortality per thousand of strength.	Subsequent to 1837. Period of Observation.	Subsequent to 1837. Annual ratio of mortality per thousand of strength.
West Indies :				
White Troops	1817 to 1836	$81\frac{5}{10}$	1837 to 1853	$62\frac{5}{10}$
Black Troops	1817 to 1836	$40\frac{2}{10}$	1837 to 1853	$32\frac{2}{10}$
Jamaica :				
White Troops	1817 to 1836	128	1837 to 1855	60
Black Troops	1817 to 1836	30	1838 to 1855	$38\frac{2}{10}$
Ceylon :				
White Troops	1817 to 1836	$74\frac{9}{10}$	1837 to 1856	$38\frac{6}{10}$
Black Troops	1818 to 1836	$26\frac{9}{10}$	1837 to 1856	$22\frac{7}{10}$
Cape of Good Hope :				
White Troops	1818 to 1836	$15\frac{6}{10}$	1838 to 1856	$15\frac{9}{10}$
Hottentot Troops	1822 to 1834	$12\frac{5}{10}$	1838 to 1856	$17\frac{5}{10}$
Mauritius	1818 to 1836	$30\frac{7}{10}$	1838 to 1855	$24\frac{6}{10}$
St. Helena	1818 to 1821 and 1836 to 1837	$25\frac{4}{10}$	1837 to 1856	$12\frac{3}{10}$
Gibraltar	1818 to 1836	$22\frac{3}{10}$	Do. Do.	$12\frac{9}{10}$
Malta	1817 to 1836	$18\frac{7}{10}$	Do. Do.	$18\frac{2}{10}$
Ionian Islands	1817 to 1836	$27\frac{4}{10}$	Do. Do.	$17\frac{9}{10}$
Bermuda	1817 to 1836	$35\frac{4}{10}$	Do. Do.	$35\frac{5}{10}$
Canada	1817 to 1836	20	Do. Do.	$17\frac{2}{10}$
Nova Scotia	1817 to 1836	$17\frac{8}{10}$	Do. Do.	$15\frac{1}{10}$
Newfoundland	1825 to 1836	$37\frac{7}{10}$	1837 to 1856	11
Bengal	1817 to 1836	$75\frac{6}{10}$	1838 to 1856	$76\frac{2}{10}$
Madras	1817 to 1836	$76\frac{1}{10}$	1838 to 1856	$41\frac{5}{10}$
Bombay	1817 to 1836	$62\frac{8}{10}$	1838 to 1856	$60\frac{2}{10}$
Van Diemen's Land	Data not available.	- -	1839 to 1856	$11\frac{8}{10}$
New Zealand			1844 to 1856	$12\frac{8}{10}$

These are exclusive of killed in action, so far as they can be ascertained, except as regards the returns from the three Presidencies of India, in which the men killed in action or who died of their wounds are included, as the documents did not admit of their separation from the others prior to 1837. In the subsequent period, they amounted in Bengal to 6·65, Madras to 0·22, Bombay 1·26 per 1,000 of the strength.

But the Guards, it must be observed, who have the highest rates of mortality of all the troops serving in the United Kingdom, do no Indian nor colonial duty, and the majority of the cavalry serves almost as exclusively at home.

The following table shows the deaths per 1,000, on different stations in the navy and army, from 1830 to 1836 :—

	Navy.	Army.
On the home station	8·8	13·7
Mediterranean, including, in navy, the peninsular command	9·2	18·
Naval forces in the East India command and troops in Ceylon	15·1	46·2

But a certain proportion of this superiority on the part of the navy is accounted for by the larger amount of invaliding in that service than in the army, as will be seen from the following table :—

		Navy.	Army.
Home station	No of men invalided per 1,000.	38·2	25·3
Mediterranean		25·7	9·5
East India command and Ceylon		33·6	3·6

The following table, for a later period, shows the mortality *from disease alone* in the navy, in the seven years, 1837–43 :—

Part III. Stat. Rep. on the Health of the Navy, 1854. p. 272.

	Per 1,000 annually.	
Home	6·8	
South America	6·7	
Various	8·	
Packet Service	8·6	
North Coast, Spain	8·5	4 years' average only.
Mediterranean	10·7	
Cape	11·	
West Indies	19·2	Unhealthy stations.
East Indies	34·2	Unhealthy stations.
West Coast, Africa	57·0	Unhealthy stations.
Annual average per 1,000	14·9	Mean force 33,000.

From this it appears that, though on the most unhealthy station the mortality reaches 57 per 1,000, among the seamen at home, who generally are young men entering the service, it is less than that of the general population at the same ages; but it must be remembered that the disadvantage of foreign service is more than compensated by the constant removal of the weak and sickly men by invaliding, both from the army and navy. How largely the apparent rates of mortality are reduced by this process may be inferred from the fact stated by Sir Alexander Tulloch, that among the men discharged from the army on temporary pension the deaths are no less than 119 per thousand per annum. The amount of loss to the army by death and by invaliding is well illustrated by the series of diagrams by Dr. Farr, which are to be found in the Appendix P. 526. Q. 6391.

Causes of Mortality.

This excessive mortality should in some way be accounted for. The collecting together of great numbers of men has always been found to generate disease, because they were probably in excess of what a given locality could accommodate or for which the sanitary precautions of the district were originally calculated. That in war men should die from exposure, from fatigue, from insufficient supplies, is intelligible; or that the occupation of a town of 30,000 inhabitants by an army of 30,000 men, without any sanitary precaution, suddenly doubling the population to the area, and thereby halving the proportion of every accommodation, supplies, water, drainage, sewerage, &c., &e. should engender disease, is readily understood; but the problem submitted to us is to find the causes of a mortality more than double that of civil life among 60,000 men, scattered in numbers seldom exceeding a thousand in one place among a population of 28,000,000, in time of profound peace, in a country which is not only the healthiest, but which possesses the greatest facility of communication and the greatest abundance of supply in Europe.

The causes assigned to us for these high rates of mortality are:— Q. 4207. 5888.

1. Night duty.
2. Want of exercise and suitable employment.
3. Intemperate and debauched habits among the soldiers.
4. Crowding and insufficient ventilation, and nuisances arising from latrines and defective sewerage in barracks.

Without rejecting any cause which may contribute in any degree to the deterioration of the health of the soldier we are, after a careful investigation of the subject, disposed to attach little comparative importance to the first head. The comparison with the police who perform a night duty far more severe and yet have a rate of mortality of only one half that of the infantry of the line and less than one half of that of the Guards, seems to support our conclusion. It has been stated, however, that practically the service of the police lasts on an average but five years, owing to the frequency of invaliding or resignation on account of ill health, whereas the average service of the soldier is considerably longer.

Taking, however, the first five years of a soldier's duty, namely from 20 to 25 years of age, assuming that some months have been spent in drill, and comparing it with the five average years of the policeman who begins his service at 25 (a comparison in which the relative age is in favour of the soldier), we find that the mortality in the infantry of the line is 17·8 per 1,000, and in the Guards 20·4 per 1,000, against 8·92 per 1,000 in the police.

It appears, likewise, that when the Guards were engaged in the suppression of the outbreak in Canada, in 1838, their rates of mortality, which at home are in excess of those of the infantry of the line, upon that occasion fell below them. The mortality in the line during that period, in Canada, being 16·5 per 1,000 per annum, and that of the Guards 14·5 per 1,000. Stat. Rep. on the Sickness and Mortality of Troops 1853. p. 14.

The second division of the subject assigns a cause of disease and mortality to the existence of which, without the evidence which we are enabled to adduce upon the subject, many would be indisposed to give credence, viz., the want of exercise and suitable employment.

Of all classes of this country, including trades, occupations, and professions, and including also what may be called the affluent or easy classes, the longest lived is the agricultural labourer. He is neither the best fed, nor the best clothed, nor the best housed man in the country. In many districts he is quoted, and truly quoted, as the reverse. But the one condition in which he differs most from all other classes is the amount and the variety of exercise which he takes in the open air.

Throughout the tables, showing the rates of mortality in different trades and occupations, those whose avocations require much exercise, whether in doors or out of doors, have almost invariably a decided advantage over those requiring less muscular exertion. The rates of mortality of the cavalry of the line, as has been already shown, are but 13·6 per annum in a thousand, as against 17·9 in the infantry of the line; and this difference, we believe, is in some degree attributable to the greater number of hours passed out of doors on duty by the trooper, the variety of exercise which he takes,—part of his duty being on horseback, part on foot,—and the amount of muscular exertion required of him in grooming his horse, which is far greater than any exacted of the infantry soldier. His stable duty, as well as his sword exercise, calls into activity a different set of muscles to those exercised by men in marching. Indeed, all the attitudes of the foot soldier on parade, at drill, and on the march, are singularly monotonous and constrained, and it is rare to see an infantry soldier whose figure is as fully developed or as well set up as that of the cavalry soldier.

Stat. Rep. on Sickness and Mortality of Troops 1858, p. 13.

Evid. Q. 6405.

Colonel Lindsay, speaking of the soldier's daily life, says that—

Q. 5851. "Perhaps no living individual suffers more than he from ennui. He has no employment, save his drill and his duties; these are of a most monotonous and uninteresting description, so much so that you cannot increase their amount without wearying and disgusting him. All he has to do is

Q. 5859. under restraint; he is not like a working man or an artisan; a working man digs and his mind is his own, an artisan is interested in the work on which he is engaged; but a soldier has to give you all his attention, and he has nothing to show for the work done."

Q. 5853. This is the manner in which his day is spent by the private in the Foot Guards:—

"He gets up at six. There is no drill before breakfast; he makes up his bed and cleans his things; he gets his breakfast at seven. He turns out for drill at half-past seven or eight; his drill may last an hour and a half. If it be guard day there is no drill, except for defaulters. The men for duty are paraded at 10 o'clock; that finishes his day's drill altogether. There is evening parade, which takes half an hour; and then his time is his own till tattoo, which is at nine in winter and at ten in summer. That is the day of a soldier not on guard, or not belonging to the company which is out for minié practice."

Of the hours which the soldier has to himself he spends a very small portion in exercise or out of doors; and Colonel Lindsay, the Quartermaster-General, and Generals Mansell and Lawrence, all recommend that every encouragement and facility should be given to the soldier to practise athletic and out-of-door games and sports, as necessary both for his physical and moral health.

Q. 3151.
Q. 5861.

In the French army these considerations are so entirely recognized, and so great is the importance attached to them, that not only are the soldiers made to pass through a certain course of gymnastic exercises, but among the duties prescribed in the instructions for the medical inspectors is that of inquiring into the practice of these exercises in their districts. We are therefore inclined to place want of exercise, and especially of that species of exercise which useful labour supplies, and which would brace and develop the chest and frame, among the causes of the sickness and mortality of the infantry soldier.

The low rate of mortality in the navy, in which service the men, though necessarily berthed in a very confined space, undergo an immense amount of exercise, calling the greatest variety of muscle into play, and pass a large proportion both of day and night in the open air, appears to favour the opinion we have here expressed.

As regards the third head, namely, intemperance, if by intemperance be meant drinking to intoxication, we have no reason to think that the soldier is more intemperate than the average of the class from which he originally comes. He has no large sum paid weekly into his hands, with which to spend one or two days in drunkenness, if he were so inclined; nor, with the vigilant discipline exercised over him, could he do so with impunity. But that the soldier frequently indulges in the use of stimulating liquors, to an extent which may injure his health, though not deprive him of his senses, cannot, we think, be denied.

See Tables Con. Vital Statistics, p. 222.

Mr. Neison states that the results of an inquiry made into the rate of mortality amongst persons of intemperate habits show that at ages corresponding to those of soldiers there is, relatively to the deaths from all other causes, an excessive development of diseases of the "nervous system," and of the "digestive organs."

In England and Wales these two groups of diseases, at ages from 20 upwards, constitute 15·95 per cent. of the deaths from all causes; but amongst intemperate persons Mr. Neison asserts that they form 50·4 per cent. of all the deaths that take place, being more than three times the general average. These diseases may, according to him, therefore, be regarded, to some extent, as distinctive types of the causes of death

amongst intemperate persons, and their paucity or predominance would, in his opinion, fairly lead to inferences as to the general regularity or irregularity of the previous habits of the persons whose deaths they caused.

But the proportion of deaths in the army by diseases of the nervous system and digestive organs as compared with those caused by diseases of the respiratory organs will be seen in a table in the Appendix, which gives likewise the deaths from similar causes in the general community in particular districts, and among intemperate lives. Appendix, No. lxxi.

It appears from that table that the higher the mortality of the different branches of the service the greater is the relative amount of deaths caused by diseases of the respiratory organs; in other words, in the household cavalry, which is the healthiest service, the deaths by diseases of the nervous system and digestive organs are as many as one-fifth of those caused by diseases of the respiratory organs, while in the Foot Guards, which is the unhealthiest, they constitute but one-eleventh.

Mr. Neison does not, we apprehend, intend to assert that the test which he has employed is conclusive or of uniform value. He admits that intemperance frequently leads to pulmonary disease. All that he intends to convey, if we rightly understand him, is that, taken over whole classes and over large numbers of men, as in the army, the predominance of these two causes of death may fairly lead to inference as to general temperance or intemperance, so far as indulgence to excess in strong liquors is concerned. Even with these qualifications, however, we are unable to adopt the conclusions at which Mr. Neison has arrived. We shall presently show how much the soldier suffers from over-crowding and deficient ventilation in barracks, evils which have a direct tendency to promote that pulmonary disease which is the principal cause of mortality.

That the health of the army, like the health of the working classes in this country, would be much improved by greater abstinence from strong liquors, appears to us indisputable. We doubt, however, whether there is now such a difference in the habits of the soldier and those of the labourer or the mechanic in that respect, as would account for the extraordinary excess in the rates of mortality of the former over those of the latter. Q. 6402.

There is, doubtless, a greater amount of dissipation of other kinds among soldiers than among young men of the same class in civil life. Their residence in towns offers great temptation and great facilities for sexual debauchery; and the diseases which are thereby generated,—the existence of which the soldier, from one cause or another, frequently conceals, thereby greatly adding to the intensity of the malady, and the difficulty of cure, as well as to the necessary severity of the treatment,—no doubt have a most injurious effect on his constitution. Q. 6403. Q. 9561. Q. 9570.

There remain to be considered the effects on the health of the army of overcrowding, of insufficient ventilation, of defective sewerage, and of other noxious agencies of analogous character in barracks, and before doing so we deem it right to call attention to the influence of pulmonary affections on the mortality of the troops, as compared with the mortality occasioned by the same diseases in civil life.

The following table shows the total annual mortality per 1,000 of the troops of different arms, and of civilians in 24 large towns, at the soldiers' ages, by different diseases, and the proportion of deaths caused in either case, by chest and tubercular, as distinguished from other diseases.

Ratio of Deaths per 1,000 of mean strength by—	Household Cavalry.	Dragoon Guards & Dragoons.	Foot Guards.	Infantry of the Line.	Civil population of 24 large Towns.
Inflammation of the Lungs, Pleurisy, and Acute Catarrh -	·2	·7	1·3	1·3	·5
Spitting of Blood, Consumption, Chronic Catarrh, Asthma, and Difficulty of Breathing - - -	6·4	6·6	12·5	8·9	5·8
All Causes - - - - - -	11·1	13·6	20·4	17·9	11·9

Stat. Rep. on Sickness and Mortality of Troops, 1853. p. 20 and App. No. ii.

From this table it appears that while in civil life at the soldiers' ages, the deaths by pulmonary diseases are 6·3 per 1,000, they amount in the cavalry to 7·3; in the infantry of the line to 10·2; in the guards to 13·8 per 1,000, and that of the entire number of deaths from all causes in the army, diseases of the lungs constitute the following proportion; namely, in the cavalry 53·9 per cent.; in the infantry of the line 57·277 per cent.; in the guards 67·683 per cent.

It may be stated that in civil life insufficient clothing, insufficient and unwholesome food, sedentary and unwholesome occupations, and the vitiated atmosphere of unhealthy dwellings, all contribute to the propagation of this class of diseases. But in the army it cannot be alleged that the clothing, the food, or the nature of the occupation in itself are

of a character which would justify the imputation that they are among the predisposing causes of the excessive mortality of the soldier by pulmonary disease.

Table p. 20. Stat. Report on health of army. 1853.

If, therefore, it can be shown that the soldier in barrack breathes a vitiated and polluted atmosphere, it follows that of the four predisposing causes above enumerated, the last is the one to which the excessive liability of the soldier to this class of disease may be chiefly attributed. Many of the diseases, however, included under the general head of chest and tubercular diseases are not of a character to be directly attributable to the breathing a vitiated atmosphere. These, as we have already shown, are estimated to produce a mortality of 13·8 in the Guards, and of 10·2 per 1,000 in the infantry of the line, as compared with 6·3 per 1,000 among males of the same age in civil life in 24 large towns; or, according to the Registrar General, who adopts a slightly different classification, 10·1 as against 4·5 per 1,000 in the civil population generally at corresponding ages. But excluding inflammation of the lungs and pleura, acute catarrh, and some other diseases which may have no obvious connection with the purity or impurity of the atmosphere, and confining ourselves to consumption, chronic catarrh,* spitting of blood, asthma, and difficulty of breathing, we find a mortality of 12·5 in the Guards and 8·9 in the infantry of the line.

This one cause alone, therefore, acts with such intensity, especially when superadded to a certain amount of exposure, as not only to produce in the Foot Guards an amount of the disease in question which is greater than is produced in civil life by all the four causes united, but which actually carries off annually a number of men in the infantry nearly equalling, and in the Guards actually exceeding, the number of civilians of the same age who die of all diseases put together. These facts are clearly shown by the Diagram G, Appendix No. lxxii., by Dr. Farr.

App. lxxii.

Even here, again, it must, however, be remembered that the returns of death occasioned by pulmonary affections in the army do not present the whole amount of mortality caused by this class of diseases, a large number of men being constantly invalided and discharged from the army when incapacitated for duty by the progress of the malady.

The facts above stated lead us to the conclusion that the ravages committed in the ranks of the army, by pulmonary disease, are to be traced in a great degree to the vitiated atmosphere generated by overcrowding and deficient ventilation, and the absence of proper sewerage in barracks; and we shall think it our duty presently to describe the existing state of our barracks before suggesting the alterations which appear to be necessary to obviate the formidable evils which we are satisfied are attributable to their present condition.

It has been stated to us, as a fact so singular that it deserves further inquiry, that the only army in which the mortality does not much, if at all, exceed that of the population from which it is drawn, so far as the latter can be ascertained, is the native army in India, whose rates are slightly lower than those of the native civil population of those districts in which the rates of mortality are known.

It is also the only army with which we are acquainted which is not barracked. The sepoy receives a small sum under the name of hutting money, with which each man erects for himself a rude construction with mats and other articles of a similar character; and he frequently sleeps outside of the hut so erected.

Rep. San. Com. p. 193, Q. 9497.

It is also a fact worthy of notice, that the mortality of the army when hutted before Sevastopol in 1856, as compared with that of the troops at home, was nearly one-third less than the mortality of the infantry of the line, and two-fifths less than that of the Foot, Guards when barracked in England. The numbers are as follows:—

> The mortality of the army before Sevastopol, during 22 weeks ending May 31, 1856, was, including deaths by violence or accident, at the rate of but 12·5 per 1,000 per annum, as against 17·9 in the infantry and 20·4 in the Guards when quartered in England.

Perhaps no army was ever better cared for, or more sanitary precautions taken in its behalf as regards drainage, both of surface and subsoil, cleanliness, ventilation of huts, diet, clothing, &c., than the army before Sevastopol, during the period mentioned. In the month of May alone the mortality was at the rate of only 8 per 1,000 per annum.

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* "It has been found necessary to include chronic catarrh with phthisis and the non-inflammatory affections of the lungs, as, on examination of the Reports, most of the deaths were found to have been really cases of consumption. —*Statistical Reports on the Health of the Army*, 1853, page 20. This statement has been fully corroborated by the results of the post-mortem examinations made at Fort Pitt.

Again, the cavalry at home, whose rates of mortality are lower than those of any of Your Majesty's troops, are generally less crowded in their barracks than the infantry; the reduced strength of the cavalry regiments leaving greater space for the accommodation of each man.

In considering the effect on health of the constant breathing of a vitiated atmosphere in barracks, it must be borne in mind, that 57·277 per cent. of the deaths in the infantry of the line are caused by diseases of the respiratory organs, and of the Guards no less than 67·683 per cent.

With these general observations we now pass on to the consideration of the existing arrangements for lodging the soldier.

Barracks.

In 1855 a committee composed of a Lord of the Treasury, three army officers, of whom one was in the Grenadier Guards, a colonel of Militia, two officers of the Royal Engineers, a medical officer, and Sir Joseph Paxton, was appointed to examine into the existing construction and arrangements of barracks, and to report what changes and improvements they considered necessary. We are informed, that the new barracks erected since that date, afford very superior accommodation to those previously built, but it does not appear that any important steps have been taken towards supplying the deficiencies of the older buildings, and some of the most serious evils remain still unremedied.

The dormitories or barrack rooms are very confined, the minimum cubic space allowed to each soldier by regulation being only 450 feet, and a reference to the returns numbered xxxv. and xxxvi. in the Appendix will show that in a majority of cases even this minimum is not attained, and that in a number of barracks there is a deficiency of one third, and in some instances of more than one half of the space allotted by regulation. Sir John M'Neill states that the pauper in the Scotch workhouses is allowed 480 feet per bed, and not only is this minimum rigidly insisted upon, but the houses being scarcely ever full it is practically much exceeded, and the pauper is never in his dormitory during the day. In the barrack, on the other hand, it is stated by some non-commissioned officers examined by the Barrack Committee, that even the regulated space of one foot between the beds is practically unattained; and all experience goes to prove, that the amount of interval allowed between the beds is of more consequence, so far as health is concerned, than the mere amount of cubic space given above by the altitude of the room. Owing to the ordinary construction of the buildings, the barrack rooms very seldom have windows at opposite sides or ends of the room, and there are, consequently, very insufficient means of ventilation, though the number of men sleeping together in a confined space, renders every access to fresh air the more necessary. Even where ventilators exist, they are frequently stopped up by the men themselves, who, come from a class very little persuaded of the advantages of ventilation, and whom poverty has accustomed from their youth up to look to the exclusion of the external air, in the absence of fuel, as the best mode of securing warmth. Barrack-rooms are occasionally found in the basement of the building, approached by descending steps from the natural surface level, the tops of the windows, which open on one side only of the rooms, being little, if at all, above such surface level; and in low rooms thus situated a number of men may be found lodged in beds so closely ranged that the side of one touches the side of the other. The result is, that the soldier sleeps in a fœtid and unwholesome atmosphere, the habitual breathing of which, though producing for the most part no direct immediate effects, probably lays the seeds of that pulmonary disease which is so fatal in the British army. Of the state of this atmosphere, abundant evidence, though of a most disgusting nature, is to be found in the statements of the witnesses before the Barrack Committee.

App. xxxviii.

Q. 9819.

Q. 5011. Report of Barrack Committee, 1855, Q. 1272.

Q. 5007.

Colour-serjeant Reynolds being asked, "Did you observe any ill effect arise to the "health of the men, or to their spirits, in consequence of the atmosphere in which they "were shut up at night?" says, "There used to be frequent complaints; there was a "good deal of coughing, and it used to cause a phthisicky sensation in the throat, and "spitting in the morning."

Rep. Barrack Committee, Q. 1269.

Again, Serjeant Brown is asked—

"Have you often gone into the men's rooms in the morning before the windows were open?—Yes.

"In what state did you find the atmosphere?—In a very thick and nasty state, especially if I came in out of the air. If I went in out of my own room sometimes, I could not bear it till I had ordered the windows to be opened to make a draught.

Rep. Barrack Committee, Q. 1564 b.

"I have often retired to the passage, and called to the orderly man to open the windows. The air was offensive both from the men's breath and from the urine tubs in the room; and, of course, some soldiers do not keep their feet very clean, especially in summer time."

It must be remembered that this is not the evidence of men accustomed to the refinements of life, but of non-commissioned officers drawn from the same class as the soldiers themselves. We cannot too strongly condemn the nightly introduction of these urine tubs into the rooms in which the men sleep. Besides the indecency generated by their use, the stench proceeding from a wooden vessel saturated with urine is most prejudicial to health. Nor can any necessity be shown for this filthy practice. Colonel Lindsay states that in the small barracks at Windsor earthenware vessels were used obviating all the evils above alluded to, and no inconvenience ensued beyond two or three breakages, which were paid for as barrack damages; and Dr. Balfour has successfully abolished the nuisance in the dormitories of the Duke of York's school, substituting slate urinals, with water running through them, and separated by doors from the dormitories.

Evid. Q. 4906.
Q. 5012.
Q. 5849.
Q. 9543.

In the Report of the Barrack Committee we find the following recommendations:—

Barrack. Rep. pp. 8 and 9.

"Attached to the sleeping apartments of each company there should be an ablution room, fitted up with tin basins, and water laid on; in this room there should be a portion boarded off, divided within into two or three closed spaces, with foot-pans, where men could retire from the view of their comrades for the purpose of washing their entire persons.

"It has also been suggested that a washing establishment sufficiently large for the purpose of washing, not merely the wearing apparel of the men, but also their bedding, should be built, and that it should be provided with the improved mechanical contrivances for washing and drying clothes. It has also been stated to be of great importance that a drying-room should be specially set apart for drying the great coats and other outer garments of the men when wet."

With both these recommendations we cordially concur.

Q. 3317.
Q. 5845-6.

There are other cases to which we need not here allude, in which regard for decency and for the self-respect of the men requires that alterations should be made, of which the cost would be little more than nominal. But we must observe, that to the state of the latrines, the cesspools, and the drains, is probably to be attributed much of the excess of mortality by fever which the army statistics show over that arising from the same class of diseases in civil life; their respective rates being, deaths by fever in civil population in towns 1·2 per 1,000; in the cavalry 1·4; in the Guards 2·4; in the infantry 2·5; and in the artillery 1·9 for the ten years ending 31st March 1857.

It must be remembered that in the barrack-rooms, the atmosphere of which we have described, the men are expected to take all their meals, and the number of hours they spend in them during the day makes their thorough purification before the return of night almost impossible.

We are strongly impressed with the insufficient provision made in barracks for non-commissioned officers and married soldiers.

By a return of the barracks and encampments occupied by Your Majesty's troops on the 1st January 1857, lately presented to Parliament, it appears that out of 251 stations, at twenty only is there any separate accommodation provided for married soldiers. At Dover it consists of rooms 12 feet 7 inches long by 7 feet broad and seven feet high, affording a cubical space for a whole family of little more than 600 feet. At Woolwich a staff-serjeant with his wife and five children sleep and live in one room in which all the household labours are performed. In the casemates at Chatham the overcrowding is greater and the decencies of life are still less regarded.

The Barrack Committee recommended the establishment of a day room in barracks. They considered that the custom of taking his meals in the same room in which he sleeps is productive of a want of cleanliness in that room, and is calculated to retard the growth of those improved social habits which an increased attention to his moral and physical wants will engender in the private soldier. Some doubts, however, had been expressed by witnesses whom they had examined, whether the men would find any use for them or prefer them to the barrack-room in which they sleep. A similar doubt was expressed to us by a distinguished officer, whom we examined; but Colonel Lindsay, than whom no officer takes a greater interest in or is more conversant with the feelings of the men, states that in the Guards they have had practical experience on this matter. It appears that before the new part of the Wellington barrack was occupied, the battalion quartered in the old part had the temporary use as a day room of the new and unoccupied school room, a room 50 feet by 30, but, large as it is, the room was crowded both in the evening and during the day, so that there was not space for the men.

Q.5875-8.

Colonel Jebb, at the request of the Commission, has prepared a plan of a barrack-room, in which each man is screened from his neighbour by a bulkhead of corrugated iron, about six feet in height, but with six inches next the ground left open for ventilation.

Q. 5143-9.
App. lxxiii.

This bulkhead would not project more than four feet from the wall, so that no bed could be unoccupied without being observed. Underneath the barrack-rooms thus arranged it is proposed to place a large day-room, divided, if thought necessary for greater comfort, into four compartments by corrugated iron bulkheads. These day-rooms should, with the rest of the barrack, be well warmed, and lit by gas where it is possible, otherwise by a sufficient supply of lamps, the present allowance of light in reading rooms being far too small; and an ample supply of common forms and tables should be provided. Q. 4033–9.

We may here observe that the cost of the accommodation for the men in a barrack amounts but to one-fourth of the whole. Thus, if a barrack with all its appurtenances cost at the rate of 100*l.* per man, 25*l.* would be the sum appropriated to the barrack-rooms, the remaining 75*l.* being devoted to officers' quarters, offices, canteen, library, guard-room, punishment cells, parade ground, fives court, boundary wall, &c., none of which things, except a proportion of the offices, would be necessary to the lodging of a man of the same class in civil life. Q. 5148.

It is only upon this fourth part of the whole cost of a barrack, that any increase of outlay would be required to give the additional or better-arranged accommodation which the health of the men imperatively requires. It must be recollected, also, that nothing is more costly to the public than the annual loss of men from ill health and mortality; and though the saving which would result from a better system be indirect, and therefore difficult to estimate, yet we feel satisfied, looking at the question as a matter of finance alone, that money judiciously laid out in promoting the health and comfort of the soldier makes an ample return to the public.

It should also be recollected that it is indispensable, as the basis of all the training by which the moral standard of the army can be raised, that the soldier should be made comfortable in his quarters, and not driven to spend his time in places where nothing but evil can accrue to him. Q. 5249. Q. 5146.

Encampments.

Upon the subject of encampments, and of the selection of ground which, while affording facilities for the procuring of wood and water, is at the same time, from its position, soil, sub-soil, and exposure, free from influences likely to prove prejudicial to the health of the troops, evidence both oral and documentary was submitted to us. There is no doubt that it requires not merely theoretical scientific knowledge, but the power and habit of rapidly applying it, to enable a man to judge of the comparative value, in a sanitary point of view, of different available positions.

The Quartermaster-General informs us that there is no standing order or regulation making it imperative on the commanding-officer in the field to consult the medical officer on such subjects, though he is of opinion that such a regulation is certainly necessary; neither is any provision made for entrusting to any competent officer the cleansing, and preparing in a sanitary point of view, a town about to be occupied by a force, perhaps greatly exceeding its population, as was the case at Balaklava, where no provision was at first made for cleansing and draining, or the prevention and removal of nuisances in a sea-port town, though some 20,000 men were passing in and out daily; where the transport animals of the army were entering the town, and no means were devised for safely disposing of the manure; where cattle were slaughtered for the town and shipping, and no slaughter-houses were provided; and where there was a horribly offensive burial-ground, in which the dead of the previous winter had been laid almost in water and hardly covered with earth, so that fragments of limbs and clothing protruded above the surface. There being no regulation on these subjects it naturally follows, that the degree of respect shown to medical opinions on matters affecting the health of the troops, whether concerning personal hygiene, such as food and clothing, or the larger and more difficult subjects of barracks, hospitals, or camps, depends solely on the good sense and capacity of the officer in command, and on the tact and ability of the medical adviser. If the commanding officer be inexperienced and not sufficiently well informed to be conscious of his ignorance in such matters, he does not ask for the opinion of the medical officer, and considers it intrusive if offered. On the other hand, the best and most experienced officers in the service, knowing the value of such advice and assistance, never fail to seek it and to be guided by it, unless, indeed, the estimate which they may have formed of the knowledge and good sense of the medical officer be such as not to inspire confidence in his opinion. Q. 3167. Q. 3170. 3208. Q. 2344–52. Q. 3168. 2434.

In war, occasions must constantly occur, when no sanitary opinion can be set in the balance against strategical considerations, and loss of life by disease must be risked, as it is risked by the enemy's fire, in order to seize or hold a position on which the success of a military operation depends.

On such occasions it is still right that the medical opinion should be given in order that the commanding officer may have before him every consideration which should be weighed before he makes his decision, and it is right likewise that the opinion should be disregarded when the importance of the object to be attained is greater than the sacrifice it entails.

But if, in such a case as that supposed, it is for the interest of the service that an opinion should be tendered, it must not be allowed to depend on the character and disposition either of the commanding officer or the medical officer whether the opinion on which the lives of men may depend should be asked or offered. The duty and the responsibility of both should be defined by regulation. The medical officer should be made to feel that, charged as he is with the care of the troops in health, as well as with their treatment in sickness, he is responsible for any act or any omission which his advice or warning would have prevented; and the commanding officer should be made to feel that he is responsible for disregarding that warning or over-ruling that advice, and should have sound reasons to show for the course taken.

Q. 3204-5. 4236-8. 7979.

Under the existing system the medical officer is required by the regulations to examine the ventilation and cleanliness of the barracks and quarters, and to suggest improvements to the commanding officer, sending a copy of such suggestions to the Director-General. He is also required, upon the occurrence of cholera or any other formidable disease, to report to the Director-General his opinion as to its cause, and the treatment adopted. But no power is given him to carry into operation any of the measures he may deem necessary, nor is there any regulation authorizing him to press upon his commanding officer the adoption or even the consideration of his suggestions if the latter be not disposed to consult him. There is in this respect a total, and, as it appears to us, injurious want of connection between the medical and executive departments of the army.

By the arrangements which we shall have to propose for introducing a knowledge of sanitary science and military hygiene, as an essential part of the education of the military medical officer, he will be placed in a much more advantageous position, both as regards his competency to give advice, and the willingness of others to follow it when given.

But to secure this result, we are of opinion that the advice should be given in writing; that the reasons for disregarding it, if disregarded, should be endorsed upon it by the officer who rejects it, and that the document should be recorded and copies forwarded to the superior military and medical authorities.

We hold this rule to be equally applicable in peace or war.

Q. 9549. 9550.

How necessary such a regulation may be in peace is shown by three instances quoted in his evidence by Dr. Balfour, and which came under his own observation while assistant surgeon in the Guards. For many years the pestilential state of the Tower ditch was represented by the medical officers of the Guards as a cause of the great prevalence of fever in the garrison. The military authorities, however, declined to drain the ditch, and the nuisance remained undisturbed till, after some years, the alarm created in the minds of the inhabitants of Tower Hill by the extent of typhus prevailing in the garrison induced them to reconsider the question. The ditch was drained, and the type of fever has since been much mitigated and the cases have diminished in frequency.

App. lxiv.

A supply of good water has in the same way been introduced, after the remonstrances of the medical officers had been for years neglected, during which time the men used water taken from the Thames immediately opposite the Tower, and filtered through gravel, but which remained so full of animalcules that a witness stated he avoided using it even for washing until it had been boiled.

Again, when it was proposed for health's sake to move the men from the old into the newly-erected barrack in the Tower, in which some stores, consisting chiefly of blankets, had been temporarily placed, and to transfer the latter to the quarters vacated by the men, the proposal was negatived on the ground that the blankets would be injured by the damp. Fortunately this objection was brought under the notice of the Duke of Wellington, and the new barrack was given up to the use of the troops.

If at the head-quarters of the British army and in the Queen's Guards sanitary precautions can be so neglected, it scarcely requires evidence to establish the necessity of enforcing greater care in this respect on other and more distant stations.

Speaking of the colonies, and that at a recent date, Mr. Alexander says,—

Q. 2561.

"I made a tour of inspections in Canada, in October last; at Toronto I found a privy, the effluvia from which was much complained of, and fit to knock you down at times. The commanding officer and surgeon brought the case before me, stating that they had frequently reported it, and wished to have it remedied; the simple remedy was, to shut it up, and erect another over the lake. There

was another case of a slight leakage, at the hospital at Kingston citadel; it had been reported several times, and not attended to. There was also a drain leading from the privies at Kingston citadel in a most offensive state, and out of repair. A board had sat, and reported its state, recommending that the rain falling in the barracks should be collected into tanks, and the privies sluiced occasionally; but months had passed without the recommendation being carried out. I brought it to the notice of the general commanding, and before I left I was informed that it was about being remedied."

In war, when the necessity for sanitary precaution is much greater and the practical application of sanitary knowledge to unforeseen exigencies is more difficult, it appears to us hopeless to charge the principal medical officer, already engrossed by the overwhelming duties imposed upon him, with functions which require not only the whole vigilance of one man, but his constant personal superintendence over, perhaps, a wide extent of country.

There is also another reason for placing the duties of an officer of health in other hands than those of the principal medical officer of the expedition.

In civil life sanitary science as yet is neither much studied nor widely spread, nor has the value of its practical application to the ordinary conditions of life obtained any very general acquiescence. While the tendency to fuse together the practice of medicine and surgery has thrown almost the whole practice of the country (except that of the great towns) into the hands of the general practitioner, a subdivision of labour of another kind has simultaneously been gaining ground in the medical profession. The study of sanitary science has been taken up as a specialty, and the field has been abandoned by the mass of the profession to be exclusively occupied by those who so study it. The names of those eminent in either branch are perfectly well known to the public, who employ the one or the other according as they want individual sickness treated or public sickness prevented. It is rare to send for the health officer to treat sickness, or to employ the eminent practising physician or surgeon to drain a town or to guard a district against the approach of cholera.

The fusion between the medical and surgical specialities is, in the Army Medical Department, even more complete than in the civil profession; and if efficient sanitary officers are to be obtained, it will be by the encouragement offered by Government to the army medical officers to make themselves thoroughly masters of the specialties of that branch of the medical art and its practical application.

We hold that the medical staff of an army in the field is incomplete which does not include in its ranks a sanitary officer, second in rank to the principal medical officer, and attached to the Quartermaster-General's department. This officer should be the head of the sanitary police of the army, should be responsible for all measures to be adopted for the prevention of disease, and should report to the Quartermaster-General and to the principal medical officer.

We feel confident that had such an officer been appointed at the commencement of the late war, with instructions defining his duties and responsibilities, as well as those of the military authorities in respect to him, much of that mortality which was occasioned by the absence of sanitary precaution, both in the Crimea and on the Bosphorus, would have been prevented.

Something more, however, is necessary than merely providing for a thorough knowledge of sanitary science on the part of Army Medical Officers. Such knowledge, in most instances, can only become available through the agency of the Officers of the Royal Engineers; and, as sanitary engineering is a specialty, it appears to us that it would be highly advantageous to the Army were this branch of the science included in the course of instruction required of the Officers of that Corps.

Ration.

The ration of the British soldier consists at home of 1lb. of bread and $\frac{3}{4}$lb. of meat, at which rate it was fixed so far back as 1813, and has never since varied, except that by a Warrant dated February 1833, an additional $\frac{1}{2}$lb. of bread was given to troops encamped in England. App. xxvii.

Abroad, the ration consists of 1lb. of bread or $\frac{3}{4}$lb. of biscuit, and 1lb. of meat, either fresh or salt, the additional $\frac{1}{4}$ of a pound being given to compensate for the inferior quality of foreign compared with English meat. There are, however, two exceptional rations still given, one at Hong Kong, and the other at certain out-post stations at the Cape of Good Hope. See App. xxvii.

A reference to the paper marked xxvii. in the Appendix, will show the great variety both in the amount and composition of the ration which has been from time to time authorized in the Colonies, the frequent changes in the stoppages both at home and abroad at various periods, and the different systems on which the ration has been contracted for and supplied to the troops.

We may mention, however, that previous to the Warrant of 1850, by which the stoppage was fixed at 4½*d.* at home and 3½*d.* abroad, the soldier paid at home a sum varying with the cost of the ration at the place where he was supplied, provided it did not exceed 6*d.*, the Government defraying any cost beyond that sum if it happened to exceed it. Thus there was a different rate of stoppage enforced in different parts of the country, according as the markets were high or low, and the balance of pay accruing to the soldier varied according as he was quartered in a high or low priced district. Abroad, though the materials and cost of the ration varied, the stoppage was uniform at 5*d.*

The ration was supplied abroad by the commissariat; in England, by the Board of Ordnance from 1834 to 1854, when the supply was transferred to the commissariat; and in Ireland, by the commissariat from 1847 till 1852, from that year till 1854 by regimental contract, and since that date again by the commissariat. The Artillery and the Guards preserved the system of regimental contract to a later period than the line; but all the troops are now supplied by the commissariat, and a uniformity of system in that important particular has been established.

The ration on board ship is the same as the seaman's, for which the soldier is charged 6*d.*, in consideration of its superior value, or 5*d.*, if he does not take grog or any substitute.

In hospital the stoppages are, in peace:—

10*d.* at home,
9*d.* abroad;

in the field there is no hospital stoppage, beyond that of 3½*d.* for the ration.

There is no doubt that the frequency of the changes made in the authorized ration since 1813, and of the stoppages by which the soldier paid for its value, and the great diversity in the balance of pay to which he has been entitled according to the station at which he might be quartered, have been sources of suspicion and dissatisfaction to him.

The Warrant of 1850 had the merit of equalizing his stoppage almost throughout the world, for as the soldier receives 13*d.* pay at home, including 1*d.* for beer money, and only 1*s.* abroad, the 4½*d.* stoppage at home and the 3½*d.* abroad are, as compared with his gross pay, an equivalent stoppage, leaving the same net balance to him in both cases.

There are, however, still the two exceptions already quoted to the uniform ration and stoppage, namely, at Hong Kong and in South Africa, where additional articles of food are supplied, for which the soldier pays one penny at the former and three half-pence at the latter station.

But the ¾lb. of meat and 1lb. of bread at home, and the 1lb. of meat and 1lb. of bread abroad, with the stoppages of 4½*d.* in the one case and 3½*d.* in the other, by no means represent either the amount of food daily consumed by the soldier, or the amount of money which he pays for it. Indeed a mere bread and meat ration, even if increased in quantity, could never ensure health, without the addition of vegetable food. Q. 3675.

Some years ago the practice of having a third meal in the afternoon was introduced into some regiments by commanding officers, who paid much attention to the health and well-being of their men, the expense being defrayed by a stoppage made by consent in the regiment. Up to that time the soldier had but two meals, breakfast at half-past 7 and dinner at half-past 12; there remained therefore an interval of 19 hours during which the soldier might be altogether without sustenance; and though in most cases he probably obtained a meal at his own expense, the soldier had no guarantee that he got it at the lowest cost, nor had the public any security that the meal was the best or the wholesomest that could be provided for him.

The good effect of the introduction of this third meal on the discipline as well as the health of the men was remarkable. The meal acted as a roll-call, bringing men back into barrack towards evening; while the substitution of solid food for the dram to which exhausted men had recourse diminished drunkenness.

The success of this experiment induced the extension of the system through the whole army, and commanding officers were enjoined to see that their men were supplied with a third meal, provided always the commissariat and regimental stoppages together should in no case exceed, for rations, messing, and washing,—

8½*d.* in the Guards and Infantry,
10*d.* in the Cavalry and Artillery. } per day.

From the evidence of the non-commissioned officers it appears that the washing has usually cost—

In the Guards -	6*d.*	per week
,, Infantry	3½*d.*	,,
,, Cavalry	6*d.*	,,
,, Artillery	7*d.*	,,

Under this system the men provide themselves with the additional articles for messing by companies in the infantry, by troops in the cavalry, and by rooms or messes in the artillery, selecting their own tradesmen, and giving their orders and settling their accounts through a non-commissioned officer. Q. 4642–9.

It is clearly the duty of the Government to see that the soldier is supplied with and consumes a diet so composed as to keep him, as far as possible, at all times and in all climates in health and efficiency.

The changes which we have described have in some degree tended towards this end; but they have attained it incompletely, and in a cumbrous and expensive manner, both as regards the soldier and the public.

There are, in fact, two sources of supply to make up the diet, and two systems of stoppage to defray the cost. Nor is the ration uniform in quantity; the Warrant by which the regimental stoppage is authorized, fixing the maximum only beyond which the soldier shall not be charged.

If from any accidental cause food be inordinately dear, the maximum stoppage will not purchase enough to keep the men efficient. If the markets are unusually low, some commanding officers nevertheless mess their men up to the full stoppage, irrespective of the price of provisions, lest a large balance of pay in the men's hands should afford means of indulgence and lead to indiscipline; while others are satisfied to procure their men a proper ration, and consider that the men have a right to dispose of the balance as they think fit. Q. 3950.

It appears also that in some regiments the men, weary of the monotony of eating boiled meat every day, and unable to bake it in barracks owing to the absence of any cooking implement but a copper, send out their ration to be dressed by a baker, whom they find means to pay by diminishing their allowance of vegetables, a practice which, looking at the composition of the ration, may be prejudicial to health. Q. 3894. Q. 4217. Q. 4692–4.

We have already mentioned that in some of the colonies the system of purchase by the men becomes impossible, owing to the absence of any sufficient market, and in such cases the commissariat supply the additional articles.

But a more signal instance of failure is to be found at the commencement of the war in the East. In Bulgaria there were no markets where the men could provide themselves, and they were apparently unwilling to purchase from the commissariat stores articles with the use of which they were not familiar, and consequently they were without any accessory to the bread and meat ration, which, however, was considerably increased; the commissariat then received orders to issue coffee and sugar, an additional stoppage of 1*d.* being ordered to defray the cost. This stoppage was continued so long as the commissariat had the power to supply a demand which was unusual and unexpected. Q. 3092. Q. 3684–6. Q. 6176.

The stoppages for rations during this period were frequently varying. The soldier the day previous to his embarkation was paying 4½*d.* to the commissariat and 3½*d.* to his regimental messing. On board ship he paid 6*d.* if he took grog or coffee in lieu of grog, or 5*d.* if he abstained; in Bulgaria, on arrival he paid 3½*d.* for his commissariat ration, and 3½*d.* for his regimental messing; and when this system broke down through the absence of any market in which the companies could supply themselves, the stoppage paid to the commissariat rose to 4½*d.*, while that for the messing was reduced to *nil.* But if the man were sick, and were sent down to Scutari to hospital, he then reverted to a 3½*d.* stoppage, having again paid 6*d.* or 5*d.*, as the case might be, on board the ship that conveyed him thither. Q. 3092–5.

We find in the Appendix to the report of the Crimean Commissioners a memorandum by Paymaster Hall Dare, of the 23d Fusiliers, in which, after describing the varieties in the authorized stoppage, he states that in the field,— See Crim. Rep. App. p. 18.

"It is impossible to ascertain the situation of every man even in a company on any particular day, and of course the difficulty is multiplied by taking a larger number of men for a month, at the end of which period every soldier should be settled with."

Again he says,—

"A man in the course of the month may have been drawing rations in hospital at Balaclava, sent down to Scutari, and returned to camp. Except from the man's own statement, there is no paper to show what stoppage he is liable to since the day he left Balaclava Hospital. If," adds Mr. Hall Dare, "these separate amounts of stoppage could be assimilated, it would be a simple proceeding to credit the public with a uniform rate for every day's pay charged; and as the soldier is probably fed by the country in some shape, these varieties of situation would be neutralized, and while it would not interfere with the Royal Warrants which regulate the amount of his pay, the public would be no losers by the arrangement."

Again, Assistant Commissary-General Willan, after describing at length the various regulations under which the stoppages are effected in line and ordnance corps, observes:— See Crim. Rep. App. p. 18.

"From the foregoing regulations it is evident that an immense amount of labour and a great deal of valuable time is consumed without any apparent benefit resulting from it, and, in support

of this opinion, I need only quote one voucher in my abstract of receipts for the month of March, 1855, in settlement with the Ordnance Paymaster for ration stoppages for the Royal Artillery, which when rendered in quadruplicate, as required by the regulations, comprised no less than 348 half sheets of foolscap paper. The compilation and examination of this voucher occupied the whole time of one person for at least a week."

As regards a remedy for this evil, Mr. Willan arrives at the same conclusion as Mr. Hall Dare :—

"It occurs to me that this vast amount of labour might be greatly simplified by adopting one uniform rate of stoppage for all rations, and by the paymaster deducting the amount of the stoppage from the daily pay of the soldier."

And he adds,—

"This arrangement appears to be approved of by all paymasters to whom I have spoken on the subject.

"With regard to the stoppages for officers and their civil servants, it is a question for Government to decide, whether it would not be desirable to abolish them altogether, as the amount of them is, comparatively speaking, trifling compared with the labour required in collecting them."

A more serious objection is advanced by Colonel Gordon, Assistant Quartermaster-General in the Crimea, who says,—

See Crim. Rep. App. p. 19.

"The present system relative to the issue of rations to the troops, and the receipts given for the rations issued, appears to be very defective, and to invite irregularity, if not fraud; because the receipt for the articles issued is given on the same paper and at the same time as the 'demand' for them. This would not much signify if the rations were always forthcoming, but it frequently happens otherwise, especially with forage; and when this is the case the receipts are of course incorrect. But as they are the vouchers for the correctness of the commissary's monthly abstract of issues, I expect it will be found that in many instances they are inserted in the abstract as they are signed for, and not according to the actual issue."

See App. xxviii.

In a memorandum by Sir C. Trevelyan, which will be found in the Appendix, he states his opinion that,—

"The stoppages from the pay of the soldier for the rations supplied to him involve settlements of accounts of so operose and cumbrous a nature that, although they are gone through in time of peace at the cost of an enormous waste of labour, the whole system is immediately abandoned at the breaking out of war."

In the Caffre wars our commissariat officers reported that they had been,—

"Unable to keep up the calculations which the system required in reference to the pay of every individual soldier belonging to the numerous detachments moving over the face of the country."

As regards the late war in the East the Crimean Commissioners came to the conclusion that,—

See Crim. Rep. p. 47.

"By reducing the charge to one uniform rate, whether the soldier be doing duty on shore, or be in hospital or on shipboard, and making the balance of his pay the only matter of account, the whole of those difficulties would be at once removed and an immense amount of labour saved. The system of accounting as between the public, the paymaster, and the commissariat, would thus be placed upon a footing so simple and satisfactory that there could never at any time or under any circumstances be the slightest difficulty in settling a soldier's accounts; and so far as regards any period during which he is considered to have been on field service, the daily stoppage being always the same, the balance of pay would never vary, and it would only be necessary to establish the number of days he was entitled to receive it to admit of his accounts being at once settled.

"To arrive at this desirable result, however, it is necessary that the ration in the field should be of a fixed quantity and of a determinate value."

These observations of the Commissioners, with which we beg to express our entire concurrence, are meant to apply solely to a state of war; but all the statements as regards the complexity of the accounts and the waste of labour applies far more to peace than to war, when the system, becoming simply impracticable, is abandoned. Nothing, however, is or can be then substituted which shall act as an efficient guarantee against loss either to the soldier or to the public. In the late war an arbitrary settlement was made, and justifiably made under the circumstances, on terms purposely liberal, with a view to prevent all possibility of cavil or discontent among the men, an object which we believe was generally, though, of course, not universally obtained, but which, at any rate, was obtained by a general over-payment.

Q. 3096.

Q. 3099. 3713. Q. 4857–8.

It appears to us that it is in war, when the public expenditure necessarily becomes unlimited in extent and lavish in character, that the existence of an adequate financial check is most necessary, provided the check be simple and easily worked. That course should be habitually adopted in peace which will best satisfy the requirements of a careful administration of the public finances, and be the most applicable to a state of war, whenever war may break out. An army is maintained in peace with a view to the contingency of war, and it should be so organized as to be capable of expansion with the least possible change of method and system on the part of those who administer

it. The mass of mankind do nothing well which they have not done long; and every change unnecessarily made at the commencement of war, when such disturbing influences are unavoidable, is the addition of unnecessary error and confusion.

It appears to us, therefore, that all the arguments for a fixed stoppage and full ration in time of war apply also to a time of peace. In both cases it is the duty and interest of the government to see that the soldier is provided with such a ration as will keep him in health and efficiency. In both cases it is advantageous to get rid of a cumbrous and costly system of accounts, by which time and labour are unnecessarily consumed in peace, and which has to be abandoned in war, when the expenditure requires the greatest vigilance.

Sir Alexander Tulloch expressed an apprehension that a full ration for three meals could not be issued by the commissariat at home without a considerable increase to the staff of that department; a reference, however, to the evidence of Commissary-General Adams will show that a very small addition, and that in the lowest class, namely, the issuers, would be required to carry the arrangement into effect, and the cost of that addition would be more than counterbalanced by the saving which would result from the simplification of the regimental accounts. The Accountant-General of the Army, who expressed an opinion very favourable to the proposed change, states that the diminution of labour consequent upon it will not be confined to the regimental accounts, but will be sensibly felt in the examination and audit in the War Office. Q. 6185-9. Q. 3697. Q. 3709-10. Q. 7216. Q. 7228.

Among other advantages stated in evidence as likely to accrue if this plan be adopted, is the doing away with the temptation to small peculation on the part of the non-commissioned officers charged by the companies with providing the materials for messing.

We examined the Quartermaster General, and two other general officers who have had great experience in the internal economy of our regimental system, and all approved of the plan, though one of the latter expressed doubts as to the popularity of the change among the men. We satisfied ourselves, however, in this particular by examining several intelligent non-commissioned officers belonging to the guards, the artillery, the cavalry, and the infantry of the line, who were unanimous in its favour, though not concealing the probability that, like all changes, it would at the outset be received with some suspicion by the soldiers. Q. 4626–4652. Q. 4864–5. Q. 4936–8. Q. 5070.

We propose, therefore, that in lieu of the commissariat stoppages of $4\frac{1}{2}d.$ at home and $3\frac{1}{2}d.$ abroad for the bread and meat rations, and of the maximum stoppage of $3\frac{1}{2}d.$ for messing (exclusive of the stoppage for washing), one uniform rate at home and abroad be stopped for the entire ration, the government supplying the whole through the commissariat, including tea, coffee, milk, vegetables, with occasional flour and raisins for puddings, and the extra bread required to make up the three meals.

In the Appendix will be found the rations said to be issued in the French, Turkish, and Russian armies; also two rations proposed for the use of the English army in peace, one by Commissary-General Adams, and the other by Sir Alexander Tulloch. App. Nos. xxv.–vi. App. Nos. xxix–xxx. Q. 6220–40.

We are of opinion that no ration can be fixed upon which shall be adhered to both in peace and war. The conditions of life are so different in the two cases that whatever is suitable for the one must be either too much or too little for the other.

We have already described the listless and inactive life of the private soldier during peace. We extract from the report of the commission of inquiry into the supplies of the army of the East the following description of the soldier's life and duties in war:—

"The average weight carried by a soldier on the march, including food and water for the day, is probably not less than from fifty to sixty pounds, and while carrying that burden he is frequently required not only to march considerable distances, but also to move rapidly, and make other great exertions. In the ordinary course of his duty he is called upon to watch during the night, at longer or shorter intervals, whatever may have been his previous exertions. He is exposed to every vicissitude of temperature, and often to the inclemency of the weather by night as well as by day, and must be ready to turn out when required, at any hour, and under all circumstances. He must generally be content with the shelter of a tent, whatever the climate may be. When engaged in siege operations, he has to perform, mostly during the night, the work that a railway labourer performs by day—excavating and removing earth. When stores are to be landed, he is often required to do the work of a dockyard labourer. When employed on active service, the soldier, therefore, requires a diet as nutritious as that which is requisite to sustain the physical powers of any other man engaged in hard work, involving frequent watching and exposure." Rep. Crim. Com. p. 48.

It is obvious that the most nutritive diet which can be provided is required to repair the waste created by such exertions, under such circumstances, and Dr. Christison considered that even what is generally known as the Crimean ration, and which included 16 oz. of fresh meat, fell short in its nutritive qualities of what was advisable under the circumstances. We have included in our Appendix Dr. Christison's letter on this subject, as clearly laying down the principles on which not only the total nutritive Q. 9850. App. No. xxxiii.

value of the ration, but the comparative amounts of the different kinds of nutriment of which it should be composed, ought to be fixed. But we extract the following passage, which was quoted in his evidence by Sir John McNeill:—

Q. 9850. After stating the proportions of food which are necessary to the health and sustenance of a man, Dr. Christison says, "If the above proportion between the two sets be maintained, the weight of real nutriment per day varies, for adults at an active age, between 17 and 36 ounces; the former being enough for prisoners confined for short terms, the latter being required for keeping up the athletic constitution, or thatwhich is capable of great continuous muscular efforts, as in prize running, and other similar feats. Dietaries ought never to be estimated by the rough weight of their constituents, without distinct reference to the real nutriment in these, as determined by physiological and chemical inquiry. Keeping these principles in view, and with the help of a simple table, it is not difficult to fix the dietary advisable for any body of men, according to their occupation. It is also in general easy to detect the source of error in unsuccessful dietaries. For example, any scientific person, conversant with the present subject, could have foretold, as a certain consequence, sooner or later, of their dietary, that the British troops would fall into the calamitous state of health which befel them last winter in the Crimea. Soldiers in the field will be more efficient the nearer they are brought to the athletic constitution. But as the demand for protracted unusual exertion occurs only at intervals, the highly nutritive athletic dietary is not absolutely necessary. On the whole, from experience in the case of other bodies of men somewhat similarly circumstanced, 28 ounces of real nutriment, of which seven are nitrogenou sor reparative, will probably prove the most suitable. Any material reduction below 28 ounces will certainly not answer; and under usual exertion, kept up for days continuously, as in forced marches, or forced siege labour, the quantity should, for the time, be greater if possible."

We leave the exact amount and cost of the ration to be decided upon by those who have means at their disposal, which we have not, for ascertaining what are the variations which the climate of the various possessions of the Crown, garrisoned by British troops, require, and which the products of those countries will enable the Government to supply; keeping in mind always that an equivalent in nutritive qualities, both carboniferous and nitrogenous, for the standard ration fixed for home service, must be preserved.

The result then of the change which we propose will be, that the soldier will receive, whether at home or abroad, in peace or in war, on board ship or in hospital, a uniform net pay and a uniform ration, sufficient both in quantity and quality to provide him with three meals, and to keep him in health and efficiency. The only occasion on which the soldier would lose by this arrangement is when he is in hospital while serving with an army in the field; but as, by a change lately made he is then to be found in everything, including hospital clothing and necessaries, instead of providing
Q. 2050. himself, as he has hitherto been expected to do, from his kit, and as increased comforts will be afforded him while in hospital, the arrangement will not be inequitable for him; and some mischief will be obviated by preventing the accumulation of so much balance to be paid to the convalescent when dismissed from hospital, which is not unfrequently the cause of his return thither. Whether one exception should be made in peace by the continuance of the present hospital stoppage of 10*d.* at home and 9*d.* abroad, is a question which falls more properly under the consideration of the military authorities. The increased stoppage does not cover the whole expense of the man's treatment in hospital. It is supposed to act as a check on malingering, and there is no injustice in giving a man less pay when his work is not done, especially when he is subsisted and provided with every means of cure. It has been alleged that the rate falls heavily on the married soldier by trenching on the balance with which he supports his family, and one witness recommended that the married man should be exceptionally
Q. 3952. treated in this respect, a proposal to which the objections are many and obvious, the amount of pay to the soldier being apportioned to the value of his service, and that service being the same whether the soldier be married or single. The opinion of Mr. Kirby, the chief examiner of accounts at the War Office, which is strongly in favour of the proposed single and uniform stoppage, as greatly diminishing the labour both of account and audit, is on the same principle opposed to any additional stoppage in hospital. The chief advantages, however, which are to be derived from an uniform stoppage would still be secured, even though an exceptional stoppage were preserved for men in hospital during peace; and in war no addition to the fixed rate of stoppage would be exacted from men in hospital, and the uniformity and consequent simplicity of account would then be complete.

Whether in lieu of the nominal rate of pay and stoppage, being lower by 1*d.* abroad than at home, the rates should be equalized by adding 1*d.* for beer money to the pay abroad, and making the same addition to the stoppage, is immaterial except as a matter of account, the net balance remaining in the hands of the soldier being the same in either

case, and we offer no opinion on the subject; but it is important that the rate of stoppage should not, in very cheap colonies, appear to be larger than the actual cost of the articles supplied. Q. 7225.

It was suggested to us by General Lawrence, that the regimental contracts for shirts, socks, and other necessaries, which are sold at contract prices to the men, should also be transferred to the commissariat, as their supply necessarily devolves on the commissariat in war, when the regiment has no means of procuring or carrying with them stores of such articles. An instance was quoted to us by General Lawrence of a heavy loss incurred by a battalion of the Rifles, who took out their store of necessaries, but were unable to carry them further than Constantinople, whence they never recovered them. In the meanwhile necessaries were issued to the troops as army stores, it being found impossible for the regiments to procure them otherwise; and it appears to us that many of the reasons which we have adduced in favour of the issue of the consolidated ration by the commissariat are applicable likewise to the contracts for necessaries. Q. 3993. Q. 3994. Q. 3995–7.

Cooking.

It must be remembered that the men will never secure the whole advantage to be derived from the supply of the materials of a sufficient ration unless proper and sufficient means of cooking it are provided.

At present, in barrack as in hospital, but one mode of dressing food is recognized or provided. Coppers for boiling exist in every barrack, but no meat can be baked, roasted, stewed, or fried.

When a soldier, therefore, enters the service, he has the prospect of dining on boiled meat every day for 21 years, if he is enabled to serve so long. There can be no doubt that some variety, not only in the material but in the preparation of food, is necessary to ensure its being palatable; and we have it stated in evidence that men frequently leave part of their meat, which, when cooked and free from bone, does not much exceed half a pound, their stomach loathing the constant repetition of the same food in the same form. Q. 3060. Q. 4962–4. Q. 2931–4. Q. 3062. Q. 3894.

The experience of Dr. Balfour at Chelsea shows that a variety in the mode of cooking the food consumed has produced a higher standard of health among the boys in the Royal Military Asylum, with a positive diminution in expense. That the men themselves attach much importance to obtaining this variety is proved by the fact that they send out their meat on certain days in the week, at their own expense, to bakers in the towns where they are quartered, in order to have it cooked differently from what can be done in the barrack kitchens. Q. 9531–2. Q. 4692. Q. 5839. Q. 4847. Q. 4422. Q. 5047–9.

Clothing.

We examined not only medical, but general and other officers, as well as non-commissioned officers, with respect to the articles of clothing now issued to the men. Of late years great improvement has been made in the clothing of the troops. The form of the tunic now adopted affords protection to the hips and belly of the wearer which the coatee did not. The material is stated to be better than that formerly in use, and the fashion of tight clothing is for the present at least discarded. Too much importance cannot be attached to an easy adjustment of the clothing, so as to leave to the respiratory and other organs of the body, as well as to its muscular development, the utmost freedom. Great benefit is stated to have resulted from the use of the canvas frock at the Cape and in the Crimea, in lieu of the cloth tunic. As regards under-clothing, the balance of evidence, both of commanding and medical officers, is in favour of the flannel shirt. But the opinion of the non-commissioned officers examined was decidedly unfavourable to it, principally on the ground of the increased cost of the article, which is one of the necessaries kept up at the expense of the soldier. Q. 3273. Q. 4762–4771. Q. 3248. Q. 2779. Q. 3271. Q. 2944. Q. 4147. Q. 4629–40. Q. 5953–8. Q. 4859–61. Q. 4968–77.

The quality of the boots is complained of, and it has been suggested that a boot should be adopted, capable of being laced over the trowser, as the French gaiter is buttoned on the march, so as to prevent the accumulation of wet and mud on the loose trowser round the ankle. Q. 5075–8. Q. 4785. Q. 3247. Q. 4121–2. Q. 5943–8.

The stiff stock is condemned by almost every one who has given his opinion upon it. The men, indeed, consider that it looks smart, and some of them wish to keep it, on the understanding, however, that it may be always taken off when muscular exertion is required. This condition applied to any part of a soldier's dress appears to us to be condemnatory of it. The degree to which men suffer from the use of the stiff stock on parade and other duties is no doubt prejudicial to health; on a march they are always allowed to take it off. The complaint made of the horse-hair stocks which were substituted for the stiff leather stocks is that they coil up till they become shapeless, and rise above the collar of the coat. Q. 2774. Q. 2944–52. Q. 4733–46. Q. 4866–72. Q. 4991–6. Q. 3262–8. Q. 3266–7. Q. 4145.

We do not underrate the value of a smart and soldierlike appearance, to which the men themselves attach much importance; Serjeant Russell, of the Grenadier Guards, Q. 4736. produced before us a light leather stock which he himself and many of his comrades wear; it is manufactured by Corporal Macdonald of the Second Life Guards, and is so constructed that, while light and flexible to the wearer, it cannot rise above the collar or be displaced from its proper position. This stock appears worthy of trial.

Q. 3251. Q. 4138. But the most difficult problem to solve in army costume is the head-dress. Formerly it was a *sine quâ non* that the head-dress should protect the head of the wearer from a sabre cut. It was looked upon as armour still used for the protection of the head. We doubt the value of this protection, if it be purchased at the expense of a degree of weight and of heat likely to prove injurious to far more men than it will ever preserve from sabre wounds. The altered system of warfare, from the daily increasing range of the weapons used, renders the attempted protection of particular parts of the body more than ever useless; and it becomes the more important to consider what character of head-gear will afford the best protection to the head, not from sabre or Q. 3252. Q. 4133–8. bullet, but from heat, cold, and wet, and can be worn most conveniently by the soldier on the march or when sleeping at the bivouac.

Q. 4717–21. Q. 3257–8. Q. 4127. Much complaint has been made by witnesses of the form of the peak of the forage-cap (now no longer worn), but which had none of the advantages of a peak, as it either afforded no protection to the eyes, or, by coming down close upon them, created so heated an atmosphere as sensibly to incommode them.

This applies, though in a less degree, to the shako now in use.

Q. 4873. The busby is stated, from its form or want of form, to press in a narrow circle on the man's forehead to a degree very painful to the wearer. There is no reason why the interior of the busby should not be adapted to the form of the human head, though the Q. 5091. exterior should still preserve its rectilinear shape.

We are satisfied that the shako is, from its colour, weight, material, and form, altogether inapplicable to tropical climates such as those in which some of our troops pass a great portion of their lives. For them there is no head-dress giving so efficient a protection to the head, face, and neck as a light cap covered by wadded linen, with a flap hanging down behind, or else a few yards of linen rolled, turban-fashion, round the forage cap; and we recommend the adoption of some such head-dress in India and all climates of similar temperature.

We may add that the practice in the French and Russian armies is to discard the shako altogether on field service, and to substitute the forage-cap.

Q. 4153–7. The great coat worn in the British army is of very bad material, of little use against cold, while it readily imbibes and retains wet.

The manner of slinging the knapsack invented by Mr. Berrington appears to possess great advantages. The knapsack can be put on and taken off by the wearer without assistance. It sits easily on the back, and the straps are so placed as to relieve the arms and chest from that pressure which now causes the men much annoyance. Q. 5934. Colonel Lindsay, of the Guards, describes it as the best knapsack he ever saw put on a soldier's back, the man wearing it being unfettered in his arms, which are free from the numbness caused by the regulation slings.

We understand that there is an excess of price in Mr. Berrington's slings compared with those now in use; but we do not know how far, on a large contract, that excess might be reduced. We, however, strongly recommend a thorough trial of his method, by issuing in some regiments, say to one half the battalion, the Berrington knapsack, to be tried against the regulation knapsack worn by the other half.

Effect of Sanitary Measures.

We have devoted much time to the consideration of these five topics of barracks, encampments, food, clothing, and duty, because they include the principal conditions of the life of the soldier, and upon their sufficiency his habitual health must depend; and as it is to defects in all or some of them that we must look for the causes of the extraordinary mortality which habitually ravages the British army, so it is to their removal that we must look for the diminution of that mortality.

It ought not to be possible to say, as was said by a witness whom we examined, that Q. 5215–21. a soldier never knows a healthy home, as regards air and space, till he commits some crime which brings him into the thoroughly ventilated cell of a military prison; or as another witness stated,—

Q. 9545. "That a soldier's barrack room at present has not the least pretension to the comforts of an ordinary dwelling-house, and, what is infinitely more disgraceful, there is not even the attempt made to introduce into it the decencies of civilized life."

Sir John McNeill's evidence shows that the paupers under his charge are better lodged than our soldiers. Q. 9838.

The Duke of York's School at Chelsea was, in its conditions of life, and making a due allowance for the difference of age in its inmates, an epitome of a soldier's barrack. The same monotonous boiling of the ration, and the same over-crowding and non-ventilation of the dormitory, produced a rate of mortality among the boys of 9·7 per 1,000 on the average of ten years. By the improvement of the diet (not by an augmentation of the ration, but by variety in the mode of preparing it), by a careful ventilation of the dormitories, and a better adjustment of the space per bed, Dr. Balfour succeeded in effecting so great an improvement in the health of these children, that the mortality on the average of 8½ years since the changes were made has amounted only to 4·8 per 1,000, while the number reported unfit for military service, chiefly from the effects of strumous disease, has been reduced from an average of 12·4 to an average of 4·6 per 1,000. Q. 9529. Q. 9533.

Similar results have attended the establishment of model lodging houses when constructed with a due regard to sanitary precautions. These houses have no cesspools, they have all trapped water-closets, properly drained, and plenty of water; they are free from nuisances, and have adequate means of ventilation. Some of those occupied by families are of large dimensions, and accommodate from 300 to 600 or 700 persons of all ages. Dr. Southwood Smith, in his lectures on epidemics published last year, has given the mortality in these houses for a period of from three to five years, from which it appears that the proportion of deaths to 1,000 living was from 12·6 to 13·9 per annum, being a little above one-half the rate of the mortality of the metropolis. The last report of the Metropolitan Association shows that the rate of mortality in their houses during the three years ending June 5th, 1857, bore nearly the same proportion. Q. 9490.

If it be argued that these results are shown only in buildings which, like the model lodging-houses, have been constructed expressly with a view to health, it may be answered that barracks also should be built expressly with a view to health.

But the common lodging-houses have certainly not been built with any higher object than the accommodation of the largest number of rent-paying inhabitants. These lodging-houses were placed under inspection by Lord Shaftesbury's Act.

Mr. Assistant Commissioner Harris, of the metropolitan police, in a report to Sir George Grey, just published, describes the common lodging-houses, before the passing of this Act, as— Q. 9485.

"Crowded and filthy, without water or ventilation, without the least regard to cleanliness or decency, and hot beds of disease, misery, and crime." "Under the operation of the police inspection the evils attending such houses have been in a great degree removed or abated." "The accommodation given in the registered houses consists of clean beds and bedding, well-ventilated and lime-washed sleeping rooms, well-cleaned kitchens, plenty of water for all purposes, and good water-closets and sinks, drained and trapped to the common sewer, wherever such is available."

"From September 1851 to 1st of January 1857, the number of lodgers allowed to registered houses in the metropolis has been 91,106. The officers of health and district medical officers are unanimous in their opinion as to the great diminution of sickness from the strict sanitary precautions exercised in these houses, notwithstanding zymotic diseases still prevail amongst the poor in their immediate neighbourhood. Similar testimony has been borne to the very beneficial operations of the Common Lodging-houses Act all over the country, and the experience obtained at Macclesfield is an illustration of the good which has been accomplished in the provinces. Referring to the common lodging-houses, the town clerk says, All these pest houses have given place to clean and well-ventilated apartments. Out of 115,000 lodgments in these improved houses during the year, there were only nine cases of sickness and four deaths. No fever or other epidemic diseases have visited a single lodging-house."

Again, as regards cholera, Dr. Sutherland states that there were,— Q. 9486.

"In the common lodging-houses under inspection 61 deaths from cholera among 82,000 inmates, being about one-sixth of the rate of cholera mortality proportionably over the whole metropolis in 1854."

He quotes another remarkable instance of improvement:

"In Lambeth-square, Lambeth, which consists of 35 well-built houses, they had open privies, opening into badly constructed drains, which passed under the houses, exemplifying on a small scale the drainage defects of Scutari. In 1849 six of the inhabitants of these houses died of cholera. They suffered much from epidemic disease, and the mortality was always high. In 1851–2 there were 80 attacks of typhus, scarlet fever, and small-pox, and 24 deaths among a population of 434. In 20 years 1,250*l.* had been spent unintelligently in endeavouring to remedy the evils. The first Board of Health recommended the removal of the existing drainage, and the substitution of pipe drains and water-closets, which cost less than 200*l.* for the whole square. The mortality has since fallen about one-half, the deaths from zymotic diseases have fallen to one-seventh, and there was not a single death from cholera in 1854."

Speaking again of some of the metropolitan model lodging-houses, Dr. Sutherland says,—

"During the cholera of 1854, all of these houses escaped the epidemic, while it existed in the districts where they were situated, except in one family, consisting of ten persons, living in one of the Albert-street dwellings, in the basement, with about 276 cubic feet of space for each inmate, and this over-crowding led to four deaths among them from cholera."

It must be recollected that these improvements were not effected without much delay and difficulty, that it required the powers of an Act of Parliament to give to the authorities access to these common lodging-houses, and that the changes made were not unfrequently resisted by the owners of the houses dealt with, and by the inhabitants, who were of the lowest and least respectable class of the population.

But no such difficulty presents itself in the case of the barracks, which are the property of the Crown, and the inhabitants of which are men often drawn from some of the best portions of the labouring classes, who are serving Your Majesty, and for whose health and well-being the Government are responsible.

App. B. to Rep. of Board of Health on the Epid. Cholera, laid before Parliament, 1850.

The results of overcrowding, of non-ventilation, and of defective sewerage in the barracks are clearly apparent from a table showing the deaths from cholera among the Horse and Foot Guards in 1849, supplied by the Adjutant-General, and printed in Mr. Grainger's report on epidemic cholera, from which it appears that the troops in London, with one exception, suffered in a much larger proportion from cholera than the civil population of the parishes in which the barracks are situated.

The following table, showing the deaths per 1,000 among troops and civilians in the same parishes, is taken from the Adjutant-General's return and those of the Registrar-General, and it must be recollected that the deaths of the civilians are taken on the whole population, without distinction of age or sex :—

Civilians.	Deaths per 1000.	Troops.	Deaths per 1000.
St. Pancras	2·2	2nd Life Guards, Regent's Park	10·4
Kensington	3·3	Royal Horse Guards, Knightsbridge	17·5
Marylebone and St. Martin's in the Fields	2·7	1st Battalion Grenadier Guards, Barracks in Portman Street; 1st Battalion Coldstreams, Barracks in Trafalgar Square	3·2
St. John's and St. Margaret's Westminster	6 8	2nd Battalion Grenadier Guards,* Wellington Barracks; 3rd Battalion Grenadier Guards,* Wellington Barracks	2·0
East London and Whitechapel	5·4	2nd Battalion Coldstreams, 2nd Battalion Scots Fusilier Guards, Tower	10·0
Marylebone	1·7	1st Battalion Scots Fusilier Guards, St. John's Wood and Portman barracks	2·0

No doubt to the same causes may be partly attributed the mortality from fever in barracks, which is in ordinary years much in excess of that of the civil population.

Q. 9491. Dr. Sutherland, being asked, "Is there any reason in your estimation why barracks could not be rendered as healthy as buildings of the classes you have described?" answered,—

"None whatever; I have heard all the reasons usually assigned for the extravagantly high mortality existing in the army, and I can see no reason whatever why, if sanitary measures were applied with due intelligence to barracks, most of the excessive mortality in the army might not be swept away."

And these measures fortunately can be applied by order and at once, without rate-payers to be consulted or Acts of Parliament to be obtained.

The table at p. xii. of this report, and the diagrams supplied by Sir A. Tulloch in No. lxii. of Appendix, show how much the mortality of the white troops has been diminished, between 1837 and the present period, in the West Indies and in Jamaica, though it still remains very high on both stations. During 19 years, from 1817 to 1836, the average annual mortality of the white troops in the West Indies was 81·3 per 1,000, but during the 16 years from 1837 to 1853 it fell to 62·5 per 1,000. In Jamaica during the same periods it has fallen from 128 in the first period to 60 per 1,000 in the second, and since 1841, in which year the white troops were moved up to Newcastle, in the Blue Mountains, the average mortality has fallen as low as 36 per 1,000.

This reduction has been effected by precautions against epidemic disease, but more especially against yellow fever, and is attributable chiefly to the change of site, whether of barrack or hospital, to high localities, to the enlarged space in barracks, to increased cleanliness, to the moving or camping out of troops in all cases of epidemics, to improved diet, and the reduction of the use of salt provisions from four and five to one and two days in the week, to the greater facilities for the immediate sending home of invalids, and to the system of rotation of service applied to our reliefs, by which, except in India, no regiment remains more than three years, instead of ten or twelve years, as formerly, at unhealthy stations.

* The Wellington barracks are in St. James's Park, the most open and healthiest spot in the district.

But the strongest example of what well-directed care and precaution can effect is to be found in the comparative health at different periods of the army in the Crimea. The example is of singular value, inasmuch as it offers to our view the most complete case on record, on the largest scale, of neglects committed, of consequences incurred, of remedies applied, and of consequent improvements in health and efficiency. Without entering into any of the controversies now we trust at an end, as to what was or what was not avoidable in a winter campaign with an army unacclimated to war during a siege unexampled in its character, the facts remain, and it is our duty not to neglect the lessons that may be drawn from them.

Throughout the winter of 1854–5 the troops were suffering from work altogether disproportioned to their strength, from broken rest, insufficient clothing and shelter, unwholesome food, and want of cleanliness. As the spring advanced, to these causes of disease and mortality were added others, arising from want of drainage and ventilation, and the nuisances resulting from the lengthened occupation of the same ground without sufficient countervailing precautions. Throughout the period of seven months, from October 1, 1854, to April 30, 1855, the rate of mortality rose as high as 600 per 1,000 per annum. But in November and December of 1855, with supplies abundant, food of a wholesome character, and improving sanitary conditions, the rate of mortality per 1,000 per annum had already fallen to 44 and 33; and with huts well drained and ventilated, nuisances removed, and the camps thoroughly cleansed, from January to May, 1856, the rate of mortality of the army in the Crimea per 1,000 per annum fell to 12½ and in May to 8, as against 17·8 in the infantry at home. Diagrams H. I. and K. Appendix No. lxxii., illustrate the variations in the rates of mortality in the army in the East during the Russian war.

See Medical Returns, quoted in Sir A. Tulloch's Pamph., strength, 28,939; deaths in 7 months, 10,053.

With regard to the hospitals at Scutari and Kulalee, the evidence shows that their unexampled mortality arose from other causes beside the severe type of disease. The drains of the hospitals were nothing better than cesspools, through which the wind blew sewer air into the corridors and wards. There was no ventilation; there had been little or no lime-washing; the ward utensils infected the atmosphere; the hospitals were overcrowded; there was an overcharged graveyard close to the general hospital; the number of sick admitted went on increasing; no sanitary improvements were effected, and the mortality rose progressively month by month, as follows,—

Q. 9479. Q. 10,007. Q. 10,004.

There died 155 per 1,000 treated, from November 12 to December 9.
179 ,, ,, December 10 to January 6.
321 ,, ,, January 7 to January 31.
427 ,, ,, February 1 to February 28.

During the month of February, although the mortality rose so considerably, the number of sick in hospital as well as the admissions had fallen off, and the deaths on board the transports were only one-sixth part in February of what they were in January, showing, that though the army was becoming more healthy, the hospitals were becoming more unhealthy the longer they were used.

About the middle of March the sanitary improvements in the hospitals were commenced. During the three weeks preceding the 17th the deaths were 315 per 1,000 treated, and in the following five periods of three weeks each the progressive fall was as follows:—

Q. 10,004.

There died 144 per 1,000 treated from 18 March to April 8.
107 ,, ,, 9 April to April 29.
52 ,, ,, 29 April to May 20.
48 ,, ,, 20 May to June 10.
22 ,, ,, 10 June to June 30.

These facts will be found clearly illustrated by Diagram K., No. lxxii. of the Appendix.

It appears to us that, could the same care be bestowed upon the troops at home which was bestowed at the period we have mentioned on the army in camp and in the field, a great reduction in their rates of mortality would assuredly be effected.

We look to the practical adoption of similar precautions, as regards the troops in barracks, as among the means by which the excessive mortality of the army may be diminished. Other causes, no doubt, exercise an unfavourable influence on the health of the men, and those have not been overlooked in the practical recommendations which we now make.

We recommend that in future a minimum cubic space of not less than 600 feet be allotted to each man in his barrack-room and in the guard-room, and that an interval of at least three feet be allowed between each bed in the former.

That urine tubs be on no account tolerated in the barrack-rooms; but that urinals, with a water supply outside the barrack-room, or common chamber utensils, be substituted.

We recommend that every barrack should contain ablution rooms and baths, laundry and drying-room, and workshops; and also, that suitable provision be made for non-commissioned officers' and married soldiers' quarters.

That day-rooms be constructed for the use of the men in some of the principal barracks at home, and, if found advantageous, that they be extended to all barracks.

We further recommend that all barrack-rooms, guard-rooms, and day-rooms be sufficiently warmed and lighted, whatever may be the number of men occupying them; and that gas be used for lighting whenever it is obtainable.

That, with a view to enable the soldier to have variety in his meals, the means of baking, frying, &c., be provided in the kitchens of all barracks and hospitals.

That, with a view to the thorough ventilation of barracks, the diminution of overcrowding, the abolition of cesspools, and the formation of proper drainage and sewerage, and an abundant water supply, we recommend the appointment of a commission consisting of an engineer officer, and a medical officer versed in the practical application of sanitary science, who together with the medical officer and the barrack master of the inspected barrack shall systematically undertake the inspection of every barrack, and devise and execute the necessary works with such expedition as the available resources of the Government may permit, until every barrack in use shall in its turn be brought to a healthy and satisfactory condition; and that in the meanwhile, immediate orders be given to the barrack department to revise the allotment of men to rooms, so as to divide the cubic space more equally, and when the barracks are not full, to occupy additional rooms, thereby reducing the numbers in each, and thus, as soon as possible, secure to each soldier at least the minimum space recommended by us.

We recommend that in future, before a barrack is built, the advice and opinion of competent medical officers be taken as regards both the site and plan.

We recommend that inquiry should be made into the French system of gymnastic exercises, with a view to the adoption of some similar practice in the British army.

We recommend that facilities and encouragement be given for all athletic games, such as fives, cricket, quoits, single-stick, and for gymnastic exercises, &c., and that the men be employed on different kinds of labour when possible.

We recommend that, in order to secure that sanitary considerations shall not be overlooked in the choice of sites for encampments, hospitals, barracks, or in any matter involving the health of the troops, such as water supply, drainage, food, clothing, &c., medical officers be invariably consulted; and in order to fix on commanding officers and on medical officers the responsibility properly belonging to each, that the medical officer shall be required to give his advice in writing, the commanding officer to affix in writing his reasons for rejecting it, if he think fit to do so, and to transmit the document to superior authority.

We recommend that, in order to secure to the commanding officer of an army in the field the most efficient sanitary advice, and to relieve the principal medical officer of duties which his other avocations leave him no time to perform, a sanitary officer be appointed to act under the authority of the principal medical officer, but to be attached to the staff of the quartermaster-general.

We recommend the consolidation of the present stoppages for ration and regimental messing, and, in consideration of that consolidated stoppage, the issue to the soldier by the commissariat of a sufficient amount of food for three daily meals, including vegetables, tea, coffee, and sugar, with such variations abroad as the climate or the markets may render necessary.

We recommend that the soldiers' necessaries, hitherto obtained by regimental contract, should be provided by the commissariat.

We recommend the adoption of a better boot; also a lighter stock of the pattern specified; a more horizontal peak to the forage cap, and the substitution of a light cap, with a wadded linen cover or a roll of linen, for the shako in hot climates. Also that greater attention be paid to the interior form of the head-dress, whether shako or busby; that the great coat be of a better quality and more durable texture; that all clothing be made sufficiently loose to permit the free use of the limbs and unimpeded action of the muscles; and that the material of the clothing be adapted to the various climates in which the troops may be serving.

Lastly, we strongly recommend the immediate testing, by its issue to half a battalion, of the "Berrington" knapsack sling.

Hospitals.

Before discussing the changes which we think requisite in the organization of army hospitals it is desirable to give a short account of the existing hospitals and the system on which they are managed.

The army general hospitals in Great Britain and Ireland are three in number, and are situated at Chatham, Dublin, and Cork; but the latter is on a most limited scale. There are none in the colonies nor in India, except the Company's general hospital existing at each of the three presidencies, and such temporary general hospitals as may be formed with armies in the field.

Besides these, there are others equalling the general hospitals in extent, such as the hospitals at Dublin, Woolwich, Portsmouth, Plymouth, Aldershot, and Shorncliff; these, however, are not general hospitals, but merely congeries of several regimental hospitals, each remaining as completely distinct, in point of medical and other attendance and supervision, as though placed in the separate barracks in which their respective regiments are quartered.

Members of the Commission minutely inspected the military hospitals at two principal stations, Chatham and Portsmouth, which it is presumed may fairly be taken as specimens of the whole.

At Chatham there are four hospitals, namely, the Invalid hospital at Fort Pitt, the Garrison hospital at Brompton, the Spur Battery hospital, and a small Lunatic hospital at Fort Pitt. Q. 2019.

The following is the description of the Fort Pitt hospital given in his evidence before the Commission by the principal medical officer in charge. The wards in the hospital at Fort Pitt are not spacious enough for the number of patients apportioned to them. The beds are 22 inches apart, being themselves 31 inches wide, and 6 feet long. They are ranged opposite to one another along the walls, and the space between them from foot to foot measures 9 feet. The number of beds in each ward is 27. In the lower room the cubic space to each bed is 690 feet, the height of the room being 13 ft. 10 in.; the upper ward is 12 ft. 10 in. high, and the cubic contents only 640 ft. per bed. The number of patients to be accommodated in each ward is painted outside on the door, and was originally fixed by the barrack department; but when there are few patients in the hospital the medical officer, at his discretion, scatters them through the wards so as to secure to each man a greater space. Q. 2023-4. Q. 2028-30.

The principal medical officer states, that when the wards are full the allowance of space is very small, smaller in fact than that laid down in the hospital regulations, which give 600 feet as the minimum in temperate climates. The wards are not well ventilated, being remarkably foul in the morning. The walls are white-washed every year, but the hospital is painted only at certain stated intervals, which apparently are not sufficiently frequent, as the woodwork from being denuded of paint has a very dirty and uncomfortable appearance; though, in the opinion of the witness, painting the hospital is necessary for the health of the patients, and a bad moral effect is produced upon them by its dirty and neglected appearance. The waterclosets are badly contrived and not in good order. The privies outside are very offensive, and are close to one of the wards and to the kitchen, where great annoyance is experienced from the smell. Q. 2160. Q. 2033. Q. 2096. Q. 2101-3. Q. 2089. Q. 1352-3.

The purveyor states, that,—

"Immediately outside Fort Pitt gate there is a shaft to carry off the horrible smell from the privies, when the men inhabited the casemates, but it is much to the annoyance of the people who go past. It ventilates a series of dark privies below; and I can assure the Commissioners that I have been down there, and I have almost fainted from the horrible smell. It has drawn tears from my eyes, worse than any hartshorn bottle that I ever put to my nose. This was for the relief of the people in the casemates, but to the detriment of the public. When the wind is in a particular direction I can smell it for a quarter of a mile. I have smelt it on parade." Q. 1375. Q. 1377.

At Brompton hospital, the waterclosets are kept closed during the day, according to a witness before the Commissioners, in order to prevent their indiscriminate use by the patients, who would from carelessness or wantonness put them out of order, but, as explained verbally on the spot, because too frequent use makes them very offensive. The wards in this hospital are faulty in construction, consisting of long narrow rooms placed side by side, having windows at one end, and opening by a door on a corridor at the other. They have therefore no means of thorough ventilation, and are dependent on what can be supplied artificially. The wards are scarcely provided at all with cupboards, and the clothing and effects of the men, including blacking brushes, are placed under each bed with the chamber-pot, which is of pewter, and inferior for its purpose to crockery, creating more smell and impurity. In one building there are stone staircases for safety in case of fire; but the landings and lobbies being of wood, all egress might be cut off. In the other buildings the staircases are entirely of wood. Q. 2036. Q. 2123-6. Q. 2131. Q. 2115-16.

Q. 2044-6. The supply of utensils to the hospital rests with the Barrack Department. Each man is supplied with a plate, an earthenware bowl, and a tin mug. No cup, saucer, or earthen-
Q. 2047. ware mug is issued. The men refuse to drink out of the tin mugs, which are soon corroded and present a dirty unpleasant appearance; nor is it possible to drink any hot
Q. 2060. liquid from them, as they absorb and retain the heat, and become too hot to admit of contact with the lips. The men drink their tea and coffee from the bowl at breakfast,
Q. 2052. as also, at dinner, first their soup and then their beer; no glass is used for the men even when taking medicine.

Q. 2064. The ablutions of the patients are performed in a lavatory, where a long trough contains basins into which water can be turned by cocks; for men who are too ill to leave their beds, a basin and towel are brought. One basin is allowed to each ward. The Barrack
Q. 2072. Department supply round towels for the lavatory, but they do not supply square ones as they possess none; those are bought by the purveyor.

Q. 2076-87. The kitchens in these hospitals are very defective; that in Fort Pitt is extremely
Q. 2089. confined, and is occasionally very offensive from the proximity of the privies. There are
Q. 2082. no kitchen ranges, nor any means of roasting or baking, except in a small adjoining room
Q. 2084. which is used as a kitchen for extras, and where there are the means of baking about sixteen puddings at a time, and of frying mutton chops on a gridiron. The ordinary rations are therefore, as in barracks, habitually boiled in large coppers, and no change or variety in the preparation of their food can be effected for the sick. Upon this point we cannot forbear quoting the opinion given by Col. Haly, of the 47th regiment, before the Commission on the hospitals in the East. Col. Haly says,—

Rep. Hosp. in the East, p. 166. "During the expedition to the East, both in Bulgaria and in the Crimea, to my own positive knowledge, many a soldier, when becoming sickly or after being in hospital, has broken down from the effect of mawkish and insipid food, badly cooked, which debility and want of appetite prevented his eating; and several soldiers so situated have, to my personal knowledge, been set up and in a great measure restored to health, in my own regiment, by the help of a little wholesome and palatable food from officers' tents."

Q. 2136. Before a certain hour in the morning, when the extras for the day are prescribed and the provisions sent for, it is not possible to give chicken or beef tea for a patient requiring immediate support, the regulations not permitting any stock of meat to be kept in the hospital, nor more to be purchased than the exact amount prescribed for the day's use of the patients; the object of this regulation being to guard against the purloining of meat, that object is secured by there being no meat to purloin.

We have given these minute details at length as the best mode of describing the state of the Chatham hospitals, which, it must be recollected, are the chief hospitals of the British army, and which suffer, as it appears to us, not from casual deficiency in some one department, but from insufficient accommodation and supply pervading every branch of the establishment.

See App. No. xliii. A reference to the description given of these very hospitals in the year 1843, by Dr. Andrew Smith, then Principal Medical Officer at Chatham, will show that the account we have now given of them is by no means over-coloured; and it is worthy of observation, that the worst and most dangerous nuisances then complained of have not been removed to this day.

We have taken no evidence with regard to the Spur Battery hospital, nor did the Commissioners visit it, as it is not at present used for a hospital; but it is described by Dr. Andrew Smith, in the memorandum to which we have thought it due to him to draw attention, as "so inferior that he is ashamed to notice it."

The lunatic invalids at Chatham have hitherto been lodged in the casemates. Any place more unfit for the reception of lunatics, or indeed of sick of any description, cannot be conceived; but as a new building has recently been erected in Fort Pitt, to which they have been removed, we forbear giving any description of these casemates.

The new building has been inspected by the Commissioners in lunacy. They state that,—

Q. 6625. "It is calculated to accommodate between forty and fifty patients with the proper officer or attendants. The rooms are of good size, but the means of ventilation are in our opinion insufficient. The windows do not open sufficiently, and the only means of ventilating the galleries is by opening the windows of the waterclosets, through which the air must pass, before reaching the interior."

Comparison with Naval Hospitals.

The appearance and accommodation of the Melville hospital at Chatham, where the sick from the marines are received, present a marked contrast with the army hospitals.
Q. 2164. In the words of the Principal Medical Officer of Fort Pitt, "there can be no comparison "between the two." The building at Melville hospital is well adapted to its purpose. It

is well proportioned to the requirements of the men, and the number of patients is never excessive. There are three feet between each bed, and twelve feet from foot to foot. The cubic space allowed to each bed is 1,340 feet, the ventilation is excellent, and the wards being fresh painted, are admirably clean and very cheerful. There are separate lavatories and water-closets to each ward; the latter perfectly clean and sweet. The kitchens are very superior, and enable the men to have roast as well as boiled meat. All the washing, that is, the bedding as well as the personal linen, is done in their own laundry; in the army hospital the personal linen only is washed in the laundry, and the bedding is sent to the Barrack Department, which is a subject of complaint. The supply of furniture, crockery, glass, &c., is far more ample and of better quality than in the army hospitals. A certain proportion of female nurses are employed in the medical wards of the naval hospitals, and their presence is considered advantageous.

See App. No. xxxix.

Q. 389–92.

Two members of the Commission visited the hospital at Portsmouth, and a detailed account of it will be found in Dr. Sutherland's evidence, from which it will be sufficient to extract the following passage:

Q. 6516

"This hospital has been constructed on a very defective plan, the wards are too long between the windows from back to front, the means of ventilation are wholly inadequate, the cubic space for each patient is about one half of what it should be, the hospital is not clean, and, as there are no female nurses, it is destitute of that neatness and order observed at Haslar. Its local position is not good, though perhaps as much so as could be obtained in the locality."

"It is situated across the opening of one of the bastions, with a high rampart rising at a short distance behind it."

"The ablution room is badly lighted, and there is no proper bath accommodation. This hospital affords in every respect a striking contrast in its sanitary condition to Haslar hospital, though there are some points in which the latter would admit of improvement."

Of Haslar, Dr. Sutherland says:

"The hospital was beautifully clean in every part, the floors well rubbed, the walls and ceilings brightly whitewashed, and the light abundant. The officers' quarters are carpeted and suitably furnished. The kitchens are in the basement of the building. They were in excellent condition, amply provided with boilers, and along one side was a large iron range for cooking by gas."

With respect to the internal supply and service of the hospitals, the comparison of the Melville hospital with the army hospitals at Chatham holds good as between Haslar and the army hospital at Portsmouth.

Comparison with Civil Hospitals.

With a view to establish an accurate comparison between the general character of the buildings used as civil hospitals and those used as army hospitals, we addressed to the proper authorities queries on the subject of the space and means of ventilation in 11 of the largest civil hospitals in London, in 20 provincial hospitals, in five naval and in 45 army hospitals.

App. No. xxxix.

In all these hospitals the beds are generally about three feet wide; in one or two instances in the civil hospitals they are as much as four feet wide; in two of the provincial hospitals they do not exceed 2ft. 8½. and 2ft. 9., and in one army hospital they do not exceed 2ft. 2.

In the metropolitan hospitals the average cubic space allotted to each bed is 1,434 feet, the largest space being 2,426 feet, and the smallest in any ward 800 feet.

In the provincial hospitals the average is 1,081 feet, the largest space being 1,560 feet, and the smallest in any ward 600 feet.

In the five naval hospitals the average space per bed is 1,037 feet, the maximum being 1,340 feet, and the minimum 751 feet.

In the 45 army hospitals the average space per bed is 632 feet, the maximum in any ward being 1,143 feet, and the minimum 400 feet.

These measurements give an excess of space over the army hospitals to the metropolitan of 802 feet, to the provincial of 449 feet, and to the naval hospitals of 405 feet per bed. But in considering what space should be allotted to each patient, we must not be guided by cubic space alone, inasmuch as no loftiness in the ward can compensate for too close a juxtaposition of the patients. The importance of this consideration is best explained by the fact, that a man may be nearly suffocated in a crowd in the open air, notwithstanding the cubic space above him is immeasurable.

Q. 3279.

A return, marked xxxix. (5) in the Appendix, gives the opinions of the governors, medical officers, superintendents, and stewards of several of the chief hospitals in London and the country, on the subject of ventilation and construction. The prevailing opinion as regards ventilation is in favour of what is now technically called natural as opposed to artificial ventilation; terms which have a conventional meaning, and may require explanation. By natural ventilation is meant the free ingress or egress of air through open

App. No. xxxix. (5.)

windows, aided by additional orifices placed in different parts of the room, through which the external air is allowed to enter, and the foul air to escape. Artificial ventilation is effected either by driving fresh air in, or by extracting foul air by means of suction, through the intervention of machinery, shafts, and furnaces.

Q. 1904. Of the whole number of answers given to the queries circulated by us, but three or four speak in favour of artificial ventilation. At Guy's Hospital both systems are in operation side by side, in the new and the old buildings, and the preference is given to natural ventilation.

Q. 6541. But in each case where the subject of construction is mentioned in connection with natural ventilation, long wards with a large amount of window space and with corresponding windows on the opposite sides of the ward are insisted upon. Under this arrangement the beds are placed between the windows, and never directly opposite to a window.

Q. 6518. Dr. Sutherland, in his comparison between the French and English hospitals, gives a similar opinion in favour of natural ventilation, secured by opposite lateral windows.

Q. 4375,7,8. An objection made by Dr. Mapleton, surgeon to the 15th hussars, to this form of construction is, that if the hospital be constructed of separate blocks, so as to ensure

Q. 3320–1. the greatest amount of lateral light, the wards must be larger than is thought conducive to the comfort of the patients. The terms "larger" or "smaller" are of course comparative terms; and we find that in the Paris hospitals the smallest wards are in the buildings constructed in separate blocks, and average about 25 beds per ward as against 80 in buildings of a different construction. Dr. Mapleton, however, prefers wards

Q. 4395. containing no more than 10 beds, on the ground that one man undergoing great suffering, or dying, disturbs fewer persons in a small ward than in a large one; though, on the

Q. 10,025. other hand, Miss Nightingale states that the effect of a death is more depressing in a small than in a large ward. There are also to be set against this the difficulties of administration and attendance, which are enhanced when the patients are so much subdivided, and a larger staff is required to secure equal attention and care in every ward.

It is likewise stated that it becomes more difficult with small wards to scatter the patients, so as to give a greater amount of cubic space to each, when the hospital is not full, as a reduction to, say five patients in a ward, would expose each ward to greater risk of neglect. Again, in a hospital which is also used as a medical school, the introduction into a ward of a large number of pupils is less inconveniently felt, both as regards air and space, in a large than in a small ward.

We are informed that a Russian medical officer deputed by his government to examine the hospitals in the chief capitals in Europe, with a view to the erection of a large hospital at St. Petersburg, who has just left this country, has decided on recommending separate block buildings, with wards lighted by opposite lateral windows, and containing 25 beds each, as the best construction for hospital purposes that he has seen.

Q. 4402. Another objection raised by Dr. Mapleton is, that the opposite windows create too much light in the wards, which is disagreeable to the patients.

It is believed by those best competent to judge, that the sun's rays have a great effect upon the purity of the atmosphere, and even upon the sick themselves, though the processes by which this effect is produced are not yet known.

It is obvious that it is always possible by means of blinds to darken, if necessary, a ward that is too light for particular patients, but it is not possible by any means to lighten a ward into which, from its construction, the sun has not sufficient access.

Q. 1528. Parian cement is in some cases used for the walls of the wards. Being less porous than brick or plaster, it absorbs no organic matter and can be washed with water.

Hospitals at Paris and Brussels.

We thought it advisable to depute two members of the Commission to visit the military hospitals and barracks at Paris and Brussels, with a view to obtain a wider field of comparison than is afforded by the naval or civil hospitals at home.

Q. 4285. Most of the hospitals recently built at Paris, both military and civil, which were visited by the Commissioners, were built on the plan now generally advocated by the civil practitioners of this country; the wards are for the most part in detached blocks, and are very spacious, having windows opposite to one another on each side, the beds being placed between the windows. They are so built for the double advantage of admitting as much sunlight as possible into the ward, and of securing the greatest amount of natural ventilation; but the extremely low range of the thermometer in winter at Paris appears in a few instances to have induced recourse to artificial ventilation, primarily for the purpose of securing economy in fuel in winter.

Another condition differing from those of our own hospitals has also contributed to the adoption of various systems of artificial ventilation in the Paris hospitals, namely, the

non-existence of open fire-places, which are habitually used in England, and the absence of which would here be felt as a great privation.

Some difference of opinion exists as to the merits of the various systems of artificial ventilation in use at Paris; a comparison of which will be found in the evidence of Dr. Sutherland. Q. 4297. Q. 4318.

There can, however, be no doubt of the great superiority of the Paris buildings for the purposes of a military hospital over those of Chatham or Portsmouth. By the regulations of the French service, 740 cubic ft. is the minimum space allowed to wounds and fever cases, and 666 ft. for venereal cases; but in the military hospitals inspected the cubic space far exceeded the requirements of the regulations, and varied from 1,050 to 1,800 and 1,900 cubic feet; at Brussels also the military hospital gives 1,500 feet per bed. Q. 4334. Q. 4345.

In our military hospitals the minimum required by the regulations is 600 cubic feet per bed; but the Table in the Appendix, marked xxxix. (iv.) shows that in a vast proportion of our hospitals there are wards in which the cubic space is far below even the minimum laid down. The walls of the wards in the Lariboisière hospital are of Parian cement, and can be washed with water. In all, the floors are of waxed oak. At Vincennes some wards contain 40 beds. At the Val de Grâce they contain 50 and 52. See App. No. xxxix. (iv.) Q. 4326. Q. 4341–2.

The beds and bedding are of a superior description to those in use in our military hospitals, each man lying on a hair mattress. We may here observe that the hair mattress is the best for hospital purposes. It does not readily retain miasma; and such as it may imbibe is easily dissipated by heat. It may be washed. It is not hard, and it saves the objectionable use of a blanket under the patient. It is in use in all the general, and is being adopted in the regimental hospitals in this country.

The kitchens in the French hospitals are generally extremely good and clean. Q. 4368

There are no water-closets, and the latrines are as bad as possible, and frequently very offensive, though special methods of ventilation are used, but unsuccessfully, to counteract the evil. Q. 4293. Q. 4332–3.

The water supply, though ample for general purposes, is very defective in distribution, not being laid on to the upper floors, to which the water is carried up in buckets. Q. 4319–25.

The matters in which the French hospitals are superior or inferior to the English are those in which the same superiority or inferiority is to be found in civil life. In the spaciousness of the buildings, the excellence of the beds, and the means of cooking, the private house in France is superior to the English, while it is inferior in everything relating to the supply of water and to internal drainage and sewerage, which, next to ventilation, are the two most important points in a hospital.

In all other respects these foreign hospitals offer a contrast as marked and as unfavourable to our army hospitals as do the naval establishments at Melville and Haslar.

Military Hospitals at Home.

The contracted space and want of ventilation in our military hospitals do not give to the patients the same chance of recovery as is afforded by the better accommodation of the naval and civil hospitals of this country. Nor is their stinted and meagre appearance without its effect on the medical officers themselves. The young man who on joining the army arrives fresh from the establishments of London, Edinburgh, or Dublin, where he has seen the civilian patient tended with every appliance which can alleviate his suffering and hasten his cure, can scarcely fail to form a low estimate of the value attached by the government to the health and comfort of the soldier; nor can those who are in charge of our army hospitals feel that pride in their condition which is so strong an incentive in similar establishments elsewhere to their maintenance in the highest state of efficiency, while they keenly feel that by the public they are considered responsible for a state of things which they know to be far from creditable, but which they have neither power nor authority to remedy. We have already shown that the Director-General had not concealed from the Secretary of State the opinion he had formed of the state of the hospitals, and of the necessity of creating a new general hospital worthy of the objects to which it is to be directed, and of the nation by which it is to be provided. It is but just to the medical officers to state that the evils complained of in the particular hospitals we have described have been the subject of constant though fruitless representations on their part; but dependent as they are on other departments which have duties to perform to which the efficiency of the hospitals is necessarily secondary, it is not a matter of surprise that their remonstrances should frequently have been unsuccessful. Q. 2175–9.

The army hospitals are dependent on the Inspector-General of Fortifications for their repairs, and on the Barrack Department for their stores, furniture, hospital dresses and equipments, &c. With the exception of some articles which are provided by the purveyor, they are dependent abroad on the Commissariat for their rations, though the purveyor is empowered, if the rations be defective, to buy butcher's meat at a rate exceeding the Q. 1097.

Q. 1092. Commissariat price by 1*d.* a pound. The medical comforts are provided by the purveyor, and the drugs by the Director-General. The Engineer and Barrack Departments are set in motion by requisitions made upon them. They are in no other respect responsible for the state or the wants of the general hospitals, nor are they called upon by the nature of their duties to be present in them. If furniture, beds, or utensils of any description are required, the Principal Medical Officer makes his requisition on the purveyor, who again makes his requisition on the barrack-master, who supplies the stores required if they be on a certain authorized list, if not, then the purveyor applies to the War Office and is or is not authorized to purchase them himself. So long as the barrack-master has the articles in store, and complies with the requisition, his duty is fulfilled, and the purveyor has no authority to purchase anything which the barrack-master has authority to supply. It is clear that no improvement as to form or quality of the furniture, beds, bedding, or other equipments, is likely to take place under this system.

Q. 6729. Q. 3384. If the building be defective, the ventilation inadequate, or the drainage imperfect, the same process is gone through, beginning with the medical officer, passing through the barrack-master, and ending in the engineer's departement.

The necessity for executing all repairs, however insignificant, through the Engineer department, practically works to the detriment of the hospital. It appears in evidence before us that applications have been made for years to that department for the execution of works and repairs, some urgently necessary for the health and safety of the patients, which have either been long delayed, or in some cases not executed at all. The Director-General placed before us correspondence of various dates in which an Engineer Officer refused, on the ground that it appeared to him unnecessary, to execute a work which in the opinion of the medical officer was requisite for the health of the patients, the opinion of the engineer overruling the professional opinion of the medical officer, and even of the Director-General.

Q. 1347. Q. 1351. Q. 1356. Q. 1381. Q. 1383.

Q. 3414. Q. 1349. In regimental hospitals the evil is less felt, though even in them the inconveniences are complained of. In the general hospitals the barrack-master makes a monthly inspection, when the necessary repairs are pointed out to him. Should any deficiency be discovered the day after the inspection, it would either have to wait till the next monthly inspection, or recourse must be had to a requisition marked "immediate," which is attended to as soon as the necessary correspondence will permit, and the engineer officer has satisfied himself of the necessity of the repairs, and the advisability of the contract, if a special contract be necessary.

Q. 3385–9.

Q. 3390–1. Small repairs, though equally requiring these preliminary forms before they are ordered, are executed by standing contracts fixing the prices of work, each repair being charged by measurement, wherever that is possible.

Q. 3390. Q. 6735. The contracts are for three years, and by open tender, the lowest tender being accepted.

Q. 3406–8. Colonel Chapman doubts the policy of the open tender, through which inferior tradesmen under-bid the better class, and recompense themselves by the inferiority of their work.

On the other hand, it seems doubtful whether the triennial contract does not deprive the government of the advantage of a fall in the cost of material and labour, as the tradesman would, in a contract extending over so long a period, guard himself against the possibility of a rise.

Q. 3422. Q. 3497. The annual estimates for the requirements of the hospitals as regards building or repairs are sent to the Inspector-General of Fortifications, and by him are submitted to the Secretary of State. If the totals of the estimate are found on reaching the Treasury to be too large for the probable resources of the Exchequer, they are returned for reduction, and the vote in which hospitals, together with all other buildings, civil and military are comprised, is submitted for reduction to the Inspector-General. The medical officers complain that under this system more than a due share of the reduction falls to the lot of the Medical Department, and they urge that the hospitals should form a separate vote which should be proposed to the Secretary of State, not by the Inspector-General of Fortifications, but by the Director-General, who could explain and defend the items of which it is composed. We are inclined to agree with this view, being of opinion that all matters concerning the efficiency of the hospitals should be the subject of direct communication between the Director-General and the Secretary of State, and not be left to the intervention of a third person not immediately interested in the condition of the buildings, namely, the Inspector-General of Fortifications. The sums allotted to each hospital for minor repairs might be applied under contracts made by the purveyor, with the sanction of the engineer officer of the district as regards both the terms of the contract and the sufficiency of the work when executed. To this proposal the Deputy Inspector-General of Fortifications sees no objection.

Q. 3498.

Q. 3499.

Captain Laffan states that the chief cause of delay in the execution of contracts on the existing system is their subdivision among different trades in lieu of their being placed in the hands of a builder, who would employ his various artificers on each class of work. At present the wood-work is contracted for by a carpenter, the brick-work by a bricklayer, the iron-work by a smith, the glass-work by a glazier, and so on; and these several and independent tradesmen are dependent on one another for punctual co-operation for the execution of any job, for the completion of which the work of each is necessary. The Deputy Inspector-General of Fortifications strongly recommends that these various contracts should be combined and placed in the hands of a builder, whose own men acting under his command would at once execute the work required. With this suggestion we cordially concur. Q. 6740-1. Q. 6743.

As regards the original erection and construction of new hospitals at home, it appears latterly to have been the practice to take the opinion of the Army Medical Department, not only on the site, but likewise on the plan and distribution of the building. Thus, as regards the position and plans of the new general hospital now in the course of erection at Netley, on the Southampton Water, it appears from the evidence of Captain Laffan, the Deputy Inspector of Fortifications, that no step was taken without the opinion and sanction of the Army Medical Department. Q. 6728. Q. 3016-18. Q. 6797. Q. 6804.

As we have been compelled to remark on the insufficient space and stinted accommodation afforded by our existing army general hospitals, we think it due to the Government shortly to describe the plan and extent of the contemplated general hospital at Netley, the erection of which, as a substitute for Fort Pitt, has been long urged by the Director-General, and which will be constructed upon a scale in every respect worthy of the object to which it is to be devoted. Q. 6813-30.

The building will consist of a centre containing the offices, accommodation for sick officers, and residences for three of the medical officers of the establishment, and the nurses; and two wings consisting of wards calculated to contain together 960 beds.

The kitchens, laundry, and other offices are placed behind the main building, together with sleeping accommodation for the orderlies; one corridor of ample width, and 1,400 feet long, runs the whole length of the building; it has a south-western aspect and commands a view of Southampton Water.

The wards are for the most part small, there being 4 with 18 beds, 9 with 14, 8 with 12, 4 with 10, 66 with 9, and 4 with 8 beds. They have a minimum cubic space of 1,420 and a maximum of 1,700 feet to each bed, and an interval of 4 feet between the beds. They are constructed side by side, each ward opening from the corridor by a door, on either side of which there is a window, through which the sun at certain hours of the day will penetrate into the wards, the corridor having been converted into a loggia, with open arches, which may be closed in with glass during winter. There will be two wards at each end of the two wings which face the south-west, which will command a view of the river.

The wards will be ventilated from the corridor on the one side and from the external air on the other by means of the cross draught from the windows which are at either end of the ward, and also by orifices made for the admission of fresh air, the foul air escaping through hollow flues in the walls. Q. 6832-41.

The windows are to have blinds, and to be made to open either partially or entirely, and both above and below. Q. 6819.

The water-closets adjoin each ward, but are cut off from it by an intervening lobby, to secure perfect ventilation. Q. 6843-9.

The kitchens are to be fitted with every requisite means of cooking for the sick.

We are informed that it is intended to receive officers as well as non-commissioned officers and privates into the new hospital; and as we are instructed to report our opinion as to the expediency of making provision in military hospitals for officers suffering from disease or accident incurred in the service, it is our duty to state that we are of opinion, that a large class who deserve well of the state, namely, officers who have contracted disease in the service of the state, will be greatly benefited by the extension to them of the advantages of accommodation and medical attendance at a cost far below what they can be obtained for elsewhere, while their contributions, though small in proportion to the advantages given, will reduce the net cost of the maintenance of the hospital.

The addition of the officers as patients will also add variety to and enlarge the practice and range of observation of the medical officers.

General Hospitals.

In all our past wars the general hospitals of the British army have been strongly condemned, and an argument in favour of the universal use of regimental hospitals has

been founded upon that condemnation; but of necessity every war re-establishes general hospitals, and it is important to inquire whether their past mal-administration, and the suffering consequent upon it, have not been the natural result of calling upon men to create them who have had no previous experience of their organization.

The only attempt made in peace to organize any hospital as a general hospital is where a congeries of regimental hospitals is collected under one roof.

Q. 10,042. Under this system, if there are 10 regiments there are 10 surgeons, with their assistants, 10 hospital serjeants, 10 sets of attendants, &c., &c.; while in one hospital there may be two severe cases, and in another 20.

Under this system none of the 10 surgeons can be relieved from the multifarious duties which fall upon him as an administrative officer; and throughout it may be said that the division into 10 of what might be fused into one, necessarily involves waste of labour and expense.

When united, a small number of medical officers could discharge the duties of the whole. Certainly 20 medical officers could do the duty which in separate regiments is performed by 30, and opportunities would be afforded for giving leave of absence for study, or otherwise, to the remainder.

Q. 10,045. With the united system the attendance is more easily distributed. The united system is also the best adapted for mutual information and for clinical instruction, for the teaching of specialties, and collecting the materials for study, practice, and experiment.

It also affords to the inspectorial officer better means of comparing the relative professional ability of the different officers acting under him.

On the other hand, while the regimental system is adhered to, each surgeon knows his men, and comrades remain unseparated from one another, though of course promotion occasionally introduces changes in the medical staff of a regiment.

Looking, therefore, at the fact that it is not open to us to discuss whether there shall or shall not be general hospitals in war, because it is admitted that there must be, our object should be to make them as good as possible, and to take every available precaution against the recurrence of the evils which have hitherto marred their efficiency.

For this purpose the organization which is to be effective in war must have been devised and practised in peace. Under the head of field hospitals we will state in what manner we consider the supreme authority in the hospital should be strengthened with a view to the more arduous duties and the heavier responsibility which a state of war will involve.

We recommend, therefore, that for the purpose of securing efficiency in our general hospitals in war, a limited number of general in addition to regimental hospitals be maintained in peace.

Q. 10,016–17. Female nursing should be introduced in general hospitals, both at home and in the field, but not in regimental hospitals. No nurses, however, should be admitted except women of the efficiency, responsibility, and character of the head nurses in civil hospitals; say one to every 25 bad cases. The orderlies should do the same duties as are performed by assistant nurses in civil hospitals, under the head female nurse. She should be in charge of all that pertains to the bed-side of the patient; and be responsible for his cleanliness, and that of his bed and utensils; for the administration of medicine, of food, of the minor dressings not performed by the surgeon; in short, of all that concerns the personal obedience of the patient to the orders of the surgeon. She must accompany the surgeon on his visits, and receive his orders. She must also report any disobedience of the orderlies, so far as regards the patient's personal treatment.

The female nurses should be under a female head, whose duties must be carefully laid down, so as to be in accordance with a code of hospital regulations.

Q. 10,022. The difference in point of neatness, order, and discipline observable in hospitals where women are habitually employed appears to us sufficiently striking to justify the above recommendations. Upon this as upon other subjects connected with hospital management we would refer to the valuable testimony of Miss Nightingale.

Q. 9,982 et seq.

We have had before us the new Warrant re-constructing the medical staff corps as a military body. In every general hospital there should be a superior officer acting as chief over all the hospital orderlies, nurses, and attendants, who should be in charge of all the wards and of all the furniture contained in the wards from the moment that it shall have been issued by the purveyor; and who should undertake the direction of the cooking and washing, and the general care of the cleanliness and order of the hospital.

Q. 2221–4.
Q. 2569.
Q. 2872–82. We have taken but little evidence with regard to dispensers, the subject having been exhausted by the committee of the House of Commons on the medical department; but we are of opinion that competent dispensers duly attested for military service should be appointed to every general hospital, and form a part of the establishment of every regiment.

Our attention has been called by several witnesses to the position and pay of the hospital serjeant. His duties require more unremitting attention, and, what is still more important, the exercise of far more discretion than those of most of the staff serjeants. Q. 2861–9.

In our opinion, the hospital serjeant should invariably be chosen for his superior intelligence and steadiness of character, should be placed on the same footing, as regards rank, pay, and pension, as the quarter-master serjeant, and should not be appointed or removed without the concurrence of the medical officer.

Provision for Lunatic Soldiers.

The treatment and cure of lunatic officers and soldiers have constituted an important branch of our inquiries, and we have taken into consideration the question, whether it would be advisable to provide for their treatment in military hospitals. The practice previous to the late war was to receive all lunatic soldiers in the lunatic hospital at Fort Pitt, where they remained under observation till the character of their malady could be verified, and their place of residence or that of their friends ascertained, with a view to their being removed to their homes. But there always remained a certain number concerning whose birth-place or friends nothing could be ascertained, and these were treated at the public expense. For some years previous to the war they were received at Yarmouth, where a naval hospital for which the Admiralty had then no occasion, was adapted to the purpose of an asylum. When the war broke out the building reverted to the Admiralty, who required it as a hospital for the sick from the Baltic fleet; and the military lunatics were removed, the officers to Coton Hill in Staffordshire, the privates to an establishment at Bow.

The numbers at present are, 23 at Chatham under observation; the officers at Coton Hill 18, the privates at Bow 80, besides 5 females, making in all 126; but of the 23 at Chatham some no doubt will be sent home to their friends, and be provided for in county asylums. These numbers have however been considerably swelled by the war, but will probably diminish with the return of peace. An abstract of the service of patients admitted to the lunatic ward at Chatham since 1853, shows that 50 per cent. of the whole number had served under five years, and 25 per cent. did not exceed one year's service.

But before the necessities of the war deprived the military authorities of the use of Yarmouth Hospital, namely, in 1853, there had been a question of breaking up the lunatic asylum there on different grounds.

The report of Mr. Gaskell, the Commissioner in Lunacy, who had been invited by the Secretary-at-War to inspect the asylum, and the report of Mr. Milton of the War Office, which accompanied it, were of so unfavourable a character, and the probability of finding in the ranks of the Army Medical Department any person sufficiently acquainted with the specialties of lunatic treatment to undertake its reform with any hope of success appeared so remote, that the authorities were inclined to think that greater security for the application of the best curative processes to the patients could be obtained in private asylums of high character, and under the inspection of the Commissioners in Lunacy, than in any government establishment.

Since the termination of the war the Commissioners in Lunacy have addressed the Secretary of State, and urged the creation of a government establishment which shall serve both as a lunatic hospital and asylum, and they urge the example of Haslar in support of this view. App. No. xliv.

At Haslar, about 130 officers and seamen of the royal navy and marines, being lunatics, are treated at the public expense. They are admitted without reference to the length of their service or the origin of their malady, nor is the expense heavy, the service from which the lunatics are taken being numerically small compared with the army. The asylum at Haslar was brought to its present state of efficiency by the late Dr. Anderson who happened to be a friend of Dr. Conolly's and to have studied under him. The proportion of cures to admissions is very satisfactory, being considerably in excess of the average, very nearly that of the Friends' Retreat at York, and only much exceeded by Bethlehem, as shown by returns during the last ten years, to which latter establishment, however, only recent cases are admitted and from which both epileptic and paralytic patients are excluded. Q. 433. Q. 441–2. Q. 3819. Q. 3816. See App. xlv. and xlvi.

There are peculiarities attaching to the situation of Haslar which give to it, as compared with other asylums, great advantages in the treatment of seamen. The building is situated on the sea, and the airing grounds command a good view of Spithead. Boats are kept for the accommodation of the patients, who are daily sent out rowing and fishing by which means those habits are maintained which have made a sea life almost necessary to the existence of a sailor. Q. 6643. Q. 3117–19.

But Dr. Conolly, who attaches great importance to these peculiarities in the treatment
Q. 3821-2 of the seaman, draws a distinction in this respect between him and the soldier, more especially if it be not intended to return the latter to the ranks in case of cure, a practice
Q. 3850. which has long since been abandoned, most of the cases having originated in intemperance, and being frequently subject to relapse.

Q. 3824. He also doubts whether the number of military lunatics, generally about 80, would
Q. 3862. be sufficient for the purposes of classification, or would fully occupy the time and attention
Q. 3857. of one medical officer. He considers, however, that the soldier would derive advantage from
Q. 3863. the continuance of military discipline, though in incurable cases, which are the majority, he sees no advantage in a military over a private or county asylum.

Q. 6680. Mr. Gaskell, the Commissioner in Lunacy, attaches even greater importance than Dr. Conolly to the retention of the habits of military discipline as regards both officers
Q. 6663–6. and men, and would greatly prefer treatment in a government establishment to the present practice of placing the military lunatics in county and private asylums. He recommends
Q. 6692. a joint asylum for the military lunatics of the East India Company and the Queen's
Q. 6722. service.

Dr. Conolly, on the other hand, gives a decided opinion against the treatment of
Q. 3858. lunatic officers in a military establishment, it being important, in his opinion, with educated persons to break as far as possible all associations with their previous lives.

Q. 3880. Dr. Conolly speaks highly of the Coton Hill establishment, where the lunatic military officers are now placed, and with which he is himself acquainted; and he states that the asylum at Bow, where the privates are treated, is well reported of.

Q. 6688. So far as expense is concerned, there is, according to the evidence before us, but little difference between the two systems.

After well weighing the various considerations which can be adduced in favour of either system, we incline to the opinion that upon the whole the Secretary of State has come
App. No. xliv. to the right conclusion in proposing to erect at Netley, for the treatment of lunatic invalids, a lunatic hospital, and not to attempt the erection of a lunatic asylum, but to trust, as at present, to civil establishments for the permanent reception of military lunatics. The double inspection of the Lunacy Commissioners and of persons deputed by the War Department, and the interest which the authorities of these asylums have in conforming to all suggestions made to them, form, as it appears to us, an efficient guarantee for the comfort and well-being of the patients. We likewise feel that when so many and great changes, all involving considerable expense, are necessary in order to place on a footing of efficiency those establishments which the military authorities must from the nature of the case maintain, it would not be judicious to force upon the government additional duties which can be as well performed in civil establishments.

Distribution of Duties in Hospitals.

We have examined the governors and resident medical officers of some of our largest civil hospitals, and carefully inquired into their practice, as also that of the naval and the military hospitals, whether they be general, regimental, or agglomerated regimental hospitals; first, as regards their general system of administration; and secondly, as regards the distribution of duties between the medical officers and the various other functionaries on whom devolve the supply and maintenance of the establishment.

Q. 10,057. As regards the first head, it may be stated shortly that the civil hospital has one committee, who authorize the supply of all the hospital; one treasurer, who administers the finance; one secretary, who corresponds; one superintendent or house steward, who issues; one kitchen, which cooks; and one laundry, which washes for all the hospital. It has one surgery, one apothecary, one pharmacy and laboratory, one set of attendants under one head, one set of accounts, one set of medical officers, one operating theatre, one dissecting room, for all the wards of the whole hospital. There is not a bad or peculiar case in the hospital which may not be seen by all the medical officers. There is not a physician or surgeon who is not called into consultation with all the rest, so that the experience of each man becomes, to a certain extent, the common property of all.

In the military general hospitals the same unity of action is sought to be attained, but, as they are now constituted, the governing power is wanting which by its superior authority can compel the co-ordinate departments within the hospital to the complete co-operation necessary for success.

Q. 324. In the naval hospitals this object is attained, where the hospital is small, by placing the
Q. 366. supreme power in the hands of the principal medical officer; and where it is large, in the
Q. 382. hands of a governor, who is generally a naval officer of rank.

But in the agglomerated regimental hospital a part only of the general system is obtained. There is one kitchen, which cooks for all the wards, each of which is a separate

regimental hospital; and in some instances, there is one pharmacy and one dispenser, but there are separate accounts, separate classification of patients, and separate medical officers to each ward.

The regimental hospital is, of course, separate and distinct in every respect, and is necessarily the form of hospital usually adopted in the British army.

With these preliminary remarks, pointing out the characteristics of the different kinds of hospitals, the practical working of which it has been our duty to consider, we return to the comparison of the different organizations which obtain in the civil, naval, and military hospitals. In this comparison we are especially struck by the wide difference existing in the position of and in the character of the duties exacted from the medical officers.

In the civil hospitals the duties of the professional men are exclusively professional. The physician and surgeon prescribe and operate. Whatever treatment they order is followed, whatever diet they prescribe is administered. But the attention of the seniors is never distracted from the exercise of the higher duties of their profession, by the necessity of attending to the household details involved in the management of the hospital. They are relieved from all such drudgery. They bring all their learning, experience, and skill, to bear on the cases submitted to them in a hospital, where every appliance is found to their hand, and where every material want of the patient is supplied by those who not only can execute such duties better than the medical officers, but whose time is far less valuable, and cannot be better employed than in their performance. Under the superintendence of a committee or a governor the steward and the matron execute all the details of administration at an expense proportionate to the subordinate character of the duties which they discharge. Q. 568.

In the naval hospitals the same practice is observed, though in a modified degree. The higher the medical officer rises in his profession, the greater is the amount and responsibility of the medical treatment which devolves upon him. The agent, who corresponds to the house steward in civil hospitals, and to the purveyor in the army hospitals, purchases and issues everything deemed requisite by the medical officer for the comfort of the patients, or the completeness of the hospital. When there is, as at Haslar, a naval officer as captain superintendent, the medical officers stand precisely in the position of the civil practitioners in the London hospitals. Where there is no captain superintendent the Principal Medical Officer stands in the place of the superintendent, but is not on that account relieved from his strictly professional duties; and self-dependent as the naval hospitals are through the powers entrusted to the agent, in lieu of depending for the supply of their wants on the intervention of other departments, this additional duty imposes upon the medical officer no burden incompatible with the execution of his purely medical functions. Q. 323. Q. 386. Q. 349. Q. 355. Q. 376. Q. 466–9. Q. 472.

In the army the system is entirely different. It is thus described in the report of Mr. Cumming and Mr. Maxwell, on the hospitals in the East:—

"The supply of medical attendance, if it were judged by a simple comparison of the number of medical officers of all ranks on duty with the number of patients, would appear larger than it is practically, because the duties of the higher ranks of the service are almost wholly foreign to the professional treatment of the sick or wounded. The duties of the inspector-general and of the deputy inspectors are altogether administrative; the former is the governor of the hospitals, the latter assist him in the work of general superintendence and control. The sick and wounded are treated by second-class staff surgeons and assistant-surgeons, to each of whom wards are assigned. The principal medical officer is, further, daily engaged in seeing to the cleanliness of the wards, the distribution of the meals, the collection of the daily returns of his inferior officers, and the compilation from them of his own. Lastly, he is incessantly called upon, at every period of the day, to inquire into the reality of the alleged wants of articles of purveyors' stores arising in his division, and of countersigning the requisitions of his subordinate officers for them, when he has satisfied himself that the things are needed. These multifarious avocations leave him practically no time for attending to the most important of all his duties, and those which he is by education and experience best fitted to perform." Rep. Hosp. in the East, p. 30.

By this system it is true that the juniors are enabled very early to acquire a great amount of experience; but they acquire it to a great degree at the expense of the patient —they learn their mistakes by the results. The superintendence of the inspector, who has not observed the case from its commencement, is not of great practical value, especially when the number of cases is very large and his attention is distracted by the details of the administration of the hospital. A patient treated by an inexperienced junior, and superintended, or rather interfered with, by a pre-occupied senior, is as little likely to gain by the interference of the one as by the original treatment of the other.

All the evidence taken on this subject agrees in disapproval of the present practice. Sir B. Brodie states that his duties at the end of 32 years, during which he was surgeon at St. George's, were the same as on the day he began. He is of opinion that everything Q. 564.

which a surgeon requires should be found, and everything which he orders should be done, but it should be done to his hand, his time being too valuable to be spent on any duties to which his medical science and experience are not available.

Q. 566–8.

Q. 546.

We cannot but think that in addition to the direct loss to the state by the misapplication, which is the waste, of the valuable time of the seniors, this system has, indirectly, a bad effect on the juniors. Every young man looks forward to the ultimate attainment of high rank, and to the performance of the duties which belong to it. He naturally attaches the highest importance to those functions, and he insensibly learns to undervalue those which seem to belong exclusively to the lower grades, and from the practice of which he hopes, by promotion, to be emancipated. The assistant-surgeon is led by the present system to look to the performance of administrative duties as the ultimate object of his ambition, and knows that when once he can reach an inspectorial rank, it is on their performance, and not on his medical skill, that his reputation and his further chance of advancement will depend. The result must be to lower his estimation of the highest duties of a scientific profession, and diminish his ardour in its pursuit.

Neither is it without its ill effect on the senior who, when retired from the service, does not compete with the civilian practitioner on terms so advantageous as he would have done had not his medical practice been partially suspended, and his skill and science allowed to rust during the years in which he was employed on those administrative duties which occupy so much of the time of the inspectorial ranks. Our opinion of the impolicy of allowing so much of the valuable time of the medical officers to be consumed in household details, is strengthened by the following observations in the Report on the State of the Hospitals in the East, in which it is stated that—

Rep. Hosp. in the East, p. 37.

"The supply of such articles in the wards is in practice thrown, in these establishments, on the medical officers in charge of wards, whose requisitions, as we have already noticed, need the counter-signature of the staff surgeon of the division. We think that this duty should not be cast upon the medical officers. It is, in our opinion, an evil that the wards of a hospital are not furnished with their periodical supply of sheets, shirts, and even of fuel or candles, or obtain their full complements of bedsteads, bedding, and other articles of furniture, without a formality which encroaches upon the time and interferes with the legitimate duties of medical men."

All the evidence which we have taken on this subject, and especially that of Mr. Taylor, Dr. Rowdon, Mr. Pratt, the purveyor at Chatham, and Mr. Scott Robertson, now the purveyor-in-chief, have satisfied us that the relations of the purveyor to the medical officers require to be more clearly defined, and the duties of the former to be re-modelled and extended.

Q. 7175–6.

The purveyor's department had been suppressed in the year 1830 as a measure of economy. The purveyors were pensioned off, but the existing deputy purveyors continued to discharge their functions, though it was intended that eventually the office would be abolished. In 1853, however, and before the deputy purveyors had died off, the department was re-established, partly with a view to check the expenditure, and partly to prevent a considerable amount of small peculation which had existed in the service of the regimental and garrison hospitals where no purveyors were stationed, and where the supply was effected through the intervention of the hospital serjeants.

Q. 7179–80.

Q. 7183.

In this latter respect the re-establishment of the purveying system was entirely successful, but as a check upon extravagance—that is as a check on the diets prescribed for the patients by the medical officers—it probably cost more than it saved, inasmuch as the subject matter of the retrenchment was one which admitted of very small financial results, while in the interest of the patients, and therefore of the State, it required to be dealt with in a liberal manner.

The system as then carried out placed the purveyor in a position antagonistic to the medical officers, and at the commencement of the war so much practical inconvenience resulted from it, that it was necessary to issue fresh instructions to the purveyor, placing him in his proper position as subordinate to the medical officer, and bound to execute his orders and procure whatever he might prescribe as necessary to the comfort or restoration of the patient.

With the exception of these regulations there are no instructions for the purveyor's department, and of these some are stated to have been applicable only to the army in the East, and to have no bearing on the present duties of purveyors. New instructions are in preparation at the War Department, and have been submitted to us. They consist of no less than 240 articles, but it appears to us that with the changes we shall propose in the duties and position of the purveyor, they might be greatly shortened and simplified.

Q. 1148.
Q. 1576.

At Scutari the ration was at one time contracted for by the purveyor, and at another by the commissariat, and the supply sent direct from the contractor to the hospital, an account being kept between the purveyor and the commissariat. At Chatham Mr. Pratt states that he contracts for and supplies the bread and meat as well as the medical comforts, including wine. This rule holds good with all hospitals in England, both general and regimental. The barrack-master supplies the furniture, provided the articles are included in an authorized list which has remained unaltered for many years, and provided he has the articles in store. All articles not on that list, though of a similar character, are supplied by the purveyor—thus the barrack-master supplies round towels and the purveyor square ones. The barrack-master supplies saucepans and boilers, and the purveyor pudding dishes, gridirons, and frying-pans. Q. 1135–36. Q. 1110. Q. 1287, 1706. Q. 1190–1.

Without going into further details, it is obvious that as in the naval and the civil so in the military hospitals there should be but one source of supply for all that is necessary for the efficiency of the hospital, and that the officer charged with those duties should be an officer of the hospital, responsible to the principal medical officer both for the sufficiency and the quality of the articles supplied. The purveyor should have the hospital completely fitted with everything requisite for the number of patients it is calculated to accommodate, according to a revised list of articles necessary. He should have a reserve in store to meet wear and tear, or any sudden emergency through an outbreak of sickness; and he should at once and without requisition supply, for every patient, bed, bedding, table, chair, hospital dress, and utensils of every description, whether for his meals or for other purposes, according to a schedule to be laid down in his instructions.

No requisition will then be necessary, except where any article not enumerated in the list, or any nourishment not included in any of the diet tables, is required by the Medical Officer, whose order should be a voucher to the purveyor, and bear him harmless with the authorities to whom he accounts. In no case should the purveyor consider himself at liberty to judge whether the article be necessary or not; but it would be his duty, if the order appeared to him excessive, to report his opinion to the purveyor-in-chief after he has supplied the article, and the subject would then come under the cognizance of the Director-General.

In every hospital there should be kept a list of the articles necessary to the completeness of its equipment, and a table showing what things a patient should be entitled to have issued to him on his arrival.

We may observe that a considerable step has already been taken in this direction by a late order from the War Office, authorizing the issue, from the hospital stores, of several articles which heretofore the patient produced from his kit. The purveyor-in-chief states that the system we recommend is in partial operation at this moment, inasmuch as the quickest means the purveyor has of getting stores is to apply for authority to buy them. He has had several applications of this description since his return from the East, and he submitted to the War Office that the purveyors should be allowed to buy, by which arrangement the delay caused by so much reference from one department to another has been avoided. Q. 1613. Q. 1585.

Under the arrangement we recommend, the whole washing of the hospital would likewise be done in the hospital or by contract.

The first objection raised against the proposed system is, that the contracts, being smaller when separated from the general barrack contracts, might not be obtained at so low a rate. We doubt, however, whether this be so, inasmuch as many of the articles (and those the most expensive which are required in a hospital) are, or ought to be, of a different quality from the same class of articles supplied to a barrack. Thus, for example, the hospital bed should be larger than a barrack bed, and a hair mattress should be supplied in place of the paillasse; and these articles, if of a better quality, must be the subject of separate specification, if not of separate tender, whether the contract be in the hands of the barrack-master or the purveyor.

The second objection advanced is that at small out-stations occupied only by a detachment, where no purveyor can be placed on account of the expense, the stores would be devoid of efficient protection. This argument, however, is as applicable to the existing system as to the proposed change, and the difficulty would be met in the same way, namely, by entrusting the custody of the stores to the barrack serjeant, who will discharge the same duties as now, with the single difference that he will account for these stores to the purveyor instead of the barrack-master. Q. 1754. Q. 1764–8.

The system of concentrating the troops which is now being adopted both at home and abroad will also make the occasions on which recourse must be had to this expedient far less frequent than they have hitherto been.

Q. 7187. No increase to the number of purveyors will be requisite to carry the proposed
Q. 7185. system into effect, the purveying system having been extended to the colonies in the year
Q. 7180. 1856, on the ground that it is expedient to relieve the medical officers as much as possible of non-professional duties, and to guard against the recurrence of irregularities
Q. 7186. which were brought to light in some colonies where the purveying duties had lapsed into the hands of the hospital serjeants.

With these observations we close the subject of the construction, supply, and organization of the army hospitals in time of peace. As regards the selection of site, and the original construction, we recommend that in all cases competent medical sanitary officers should be consulted, and the opinion of those most conversant with the interior economy of large civil as well as army hospitals be taken before any plans are finally approved.

We recommend that the present minimum space allowed by the regulations to each bed be increased from 600 feet at home and 800 in tropical climates to 1,200 at home, and 1,500 in tropical climates; and that a minimum distance of 4 feet between the sides, and 12 feet from foot to foot, and as much more as the size of the ward will allow, be maintained between the beds.

As regards the construction of new hospitals, we recommend the adoption of the plan of separate pavilions with lateral windows on opposite sides and natural ventilation.

We recommend the adoption of Parian cement or other impervious material for the walls and ceilings of hospital wards in lieu of bare brick or plaster. Also, the universal use of hair mattresses.

We recommend that sufficient provision be made for warming and lighting the hospital according to the weather and season, on the requisition of the medical officer in charge of the ward.

That water-closets be built in connexion with every hospital, and an efficient sewerage effected by impervious drains not passing under the building, all cesspools in the immediate vicinity of hospitals being done away with, and that the building containing the closets and sinks be cut off from the hospital by a ventilated lobby.

That suitable lavatories, baths, and laundries be provided.

That the stair-cases and landings should in all cases be constructed of stone.

That proper ranges and ovens be put up in the kitchens of every hospital, so that meat may be stewed or roasted as well as boiled, and a sufficient variety in the preparation of food may be afforded to the sick.

App. Nos. xxxv. and xxxvi. As these changes will necessarily extend over a very wide field, as a reference to the evidence, and to the tables describing the present state of army hospitals, and the limited amount of cubic space afforded to each patient in the majority of them, will show, we recommend that the Commission already named for barracks shall include hospitals in their operations, and that they shall confer with the medical officer and barrack-master of each inspected hospital, and shall devise and execute, with such expedition as the available resources of the Government may permit, the necessary works, until every army hospital in use shall, in its turn, have been brought to a healthy and satisfactory condition.

We recommend that in future the vote for the building and repairs of hospitals should be separated from the vote for other military buildings, and that the estimate for the former should pass through the office of the Director-General, and be by him presented to the Secretary of State.

We recommend that in the case of items below a certain amount, and forming part of the annual estimate allotted for the repairs of each hospital, the purveyor be required to cause the repairs at once to be executed upon the standing contract made by the engineer without previous reference to that officer; and in the case of larger repairs which, though within the sum originally voted, require a special contract, the purveyor be empowered under the direction of the governor or principal medical officer, as the case may be, to enter into such contract, subject to the approval of the engineer officer, both as to the terms of the contract and the sufficiency of the work executed.

That the standing contracts, in lieu of being made separately with different trades, should be made with builders who would execute the whole work through the various artificers employed by them.

As regards the distribution of duties between the various officers of the hospitals, we recommend that the duties of supply and account, in lieu of being divided as now between several officers and departments, be vested entirely in the purveyor, who shall lay in all the furniture and utensils of all kinds necessary for the use of his hospital,

according to a list to be laid down in his instructions, keeping a certain reserve in store, and issuing, without requisition, to every patient all the articles prescribed in his instructions as necessary for the personal use of the patient.

We recommend the adoption of revised diet tables, with such alterations as may be thought advisable with reference to climate and other considerations, the object being to reduce the number of extras for which a requisition on the purveyor is necessary.

We recommend that in all hospitals to which no Governor is appointed the purveyor be placed by his instructions distinctly under the Principal Medical Officer, whose orders he shall always obey; but in case of apparent extravagance either in quantity or quality, the purveyor shall report to the purveyor-in-chief, after obeying the requisition, in order that the case may be brought under the cognizance of the Director-General.

By this arrangement the medical officers will be relieved of much of the drudgery of the household details which now devolve upon them, and will be enabled to devote their whole time uninterruptedly to their professional duties, and the inspectorial officers need no longer be debarred from taking their share in the treatment of the sick.

With the same object we recommend the adoption of simplified forms of admission books, monthly diet rolls, and returns, and that only serious and interesting cases be entered in the medical registers.

With a view to habituate the medical officers of the army with the conduct of large general hospitals, we recommend the substitution of a general hospital with a suitable scheme of organization and government, in accordance with the preceding recommendations, at Dublin and Malta, or at such other stations as the Secretary of State may select, for the agglomerated regimental hospitals now in use, and that female nursing, under the limitations we have specified, be introduced into general hospitals.

We recommend, as regards military hospitals, that apartments be provided for the reception of officers for treatment in the hospital at rates to be decided on by the government.

We likewise recommend the creation of lunatic wards at the principal general hospital, for the reception or observation of lunatic invalids, as is now done in the new lunatic hospital at Fort Pitt; but we do not at present recommend the Government to erect a lunatic asylum for the reception of incurable or other lunatics from the army, now treated in county or private asylums.

Field Hospitals.

As regards the equipments of field hospitals, Sir John Hall, Mr. Alexander, and Dr. Mouat have brought to bear upon this question the most recent experience gained by them as medical officers of the army in the East. Q. 5287.

In the Appendix will be found a complete list of the medical equipments suggested as necessary for the use of a battalion, a brigade, and a division in the field. See App. Nos. xlix. and l.

It is proposed that when any deficiency exists in this equipment, it should be supplied on the requisition of the regimental, brigade, or divisional surgeon, as the case may be, without the formality of any countersignature. This proposal is in strict accordance with the recommendation made in the Report of the Commission of inquiry into the Hospitals of the East. Those recommendations were as follows:— Q. 2616. Rep. on Hospitals in the East, p. 13.

"That every regiment should always be supplied at once with its due allowance of hospital accommodation and furniture, without requisition."

It seems to us desirable, in order to obviate, on the one hand, complaints which have been made as to the difficulty of obtaining certain medicines, and on the other, the objections which have been raised against the great variety of medicines for which requisitions have been made, that a military drug-list and Pharmacopœia adapted for field purposes should be drawn up, containing only such materials as experience has shown to be absolutely necessary for the treatment of the sick and wounded; and that, in order to make the selection and the forms as efficient as possible, the duty be committed to the representatives of the different colleges in conjunction with the army medical department.

"That a store of medicines and medical comforts sufficient for the probable wants of the army for three months, should always be kept at head quarters, or some other place easily accessible to the various divisions of the army.

"That the store of medicines and medical comforts kept with the regiment should always be sufficient for at least a fortnight's probable consumption.

"That these stores should be replenished periodically from the principal store without requisition.

"That when the regimental stores fail before their periodical replenishment, the requisition of the regimental surgeon should be complied with, without the approval of the medical officer of the division; and, to prevent fraud, that the whole of the requisition should be in the hand-writing of the surgeon."

Agreeing as we do with the recommendations above quoted, we are, however, still of opinion that supplies beyond the amount laid down as the regular field equipment ought not to be obtainable without the counter-signature of a superior authority. As no foresight can guard against all the eventualities of war, and as the most careful pre-arrangements may be defeated by unexpected circumstances, and the troops be for a time deprived of or stinted in their supplies, it is necessary that a superior discretion should be exercised as to the quantities which can be granted to any one portion of an army without incurring the risk of leaving the remainder comparatively unsupplied.

We think that hospital marquees should be issued in fixed proportion as part of the regular equipment to every division, brigade, and battalion without requisition.

As regards the practice in the late war, we again quote from the Report of the Commission on the Hospitals in the East. The Commissioners state: —

Rep. Hospitals in the East, p. 13.

"We learnt that the issue to regiments of huts and marquees and other articles was made only upon requisition. We think that the consequence of this practice may be observed in the hospital accommodation which the above table exhibits. The condition of the sick varies in every regiment, and it varies in great measure with the energy and zeal of the commanding and medical officers, and with the means of transport at their disposal. We think that the state of the men should not be left dependent on such circumstances."

We would here observe, that in no case when it can possibly be avoided should the sick be treated in bell tents. They are described as hot in summer, wet in autumn, cold in winter, unpleasant during windy weather, too confined for the performance of professional duties, ill adapted to the nursing of sick men, and far too limited on the floor to enable medical officers to render patients in any degree comfortable. On the line of march they may suffice as a shelter for transient and slight cases.

On the other hand, marquees can be made comfortable in a standing camp by means of portable bedsteads arranged on each side, with a passage along the middle. They are temperate in hot weather, dry when it rains, moderately comfortable during the prevalence of high winds, afford greater shelter than bell tents against cold, enable medical officers to approach the patients with more comfort to themselves, and permit the orderlies to attend better to the wants of the sick. But it is of the utmost

Q. 3181.

importance that they should be thoroughly ventilated, in which respect there is great room for improvement.

How little the advantages of marquees are sometimes appreciated, and how necessary it therefore is that their employment should be made a subject of regulation, is shown by the following statement made by the surgeon of the 4th Dragoon Guards, who says,—

Rep. Hospitals in the East, p. 69.

"I have made several ineffectual efforts to obtain a marquee from the purveyor at Balaklava, both by personal application and through the medium of requisitions, but have always failed in procuring one, there being none in store. When the 4th Dragoon Guards disembarked at Balaklava on the 1st October, Surgeon Pine landed the hospital marquee, but was ordered immediately to re-ship it by the Quartermaster-General of the Cavalry division; in that way it has been lost to the regiment."

But no regulations fixing the amount of field equipments for hospitals in war can be of the slightest avail in securing to the men the means of arresting disease or alleviating their sufferings, whether from wounds or other causes, unless the regulations of the military train allow of a separate or permanent supply of horse and wheel transport for

Q. 5366.

the medical as for every other department. It was stated to us, by Sir John Hall, that on the occasion of the embarkation of the troops at Varna for the Crimea, a staff officer took upon himself to disembark and return to the shore the mules and waggons allotted for the transport of the ambulance and field hospital stores. It is indisputable that during the march from Calamita Bay to Balaklava, including the battle of the Alma, additional suffering and loss of life were entailed, by this heedless proceeding, on troops already sickly.

The establishment of the military train as a separate service will, it is hoped, obviate much of the evil from which the troops suffered during the war in the East, provided the arrangements be such as to secure to each department the means of immediate movement for all ordinary purposes without requisition. It is obvious that if on every daily occasion where transport is required the accommodation is to be

Q. 9947.

procured by means of a requisition on the authorities of the military train, who in an army occupying an extended line of country may be miles away, great delay and consequent detriment to the service must ensue. It must be recollected that the carriages of the medical department are peculiar to them, and unavailable for any other service.

The ambulance carts, mule litters, and cars convey the sick, and can convey nothing else; but they are useless for their own purpose unless permanently as well as sufficiently horsed.

The same observations apply, though in a less degree, to hospital ships, which after carrying the sick home should take out medical stores, though they should likewise be made available for all other stores for the use of the army, which they can receive compatibly with their peculiar fittings.

We cannot dismiss the subject of hospitals to be established in war without noticing the great amount of mismanagement, failure, and suffering which resulted during the war in the East from the non-appointment, over the large general hospitals established at the base of operations, of some officer in the capacity of governor, whose whole time should be devoted to the creation and development of such hospitals, and who should be a man of such rank, weight, and judgment that the Government should be enabled distinctly to vest in him the largest powers and discretion as to expenditure. At the outbreak of hostilities he would at once proceed to the seat of war, and with the aid of a sanitary officer and an engineer would select the buildings to be converted into hospitals, and put them in proper sanitary condition. He would order the necessary fittings and alterations. The principal medical officer, the purveyor, and the superintendent of hospital attendants would form his council, with power to make and to minute such suggestions as they may think proper, for the consideration of the governor, who, however, should have the absolute power of acting on his own responsibility. He would thus be supreme over all the departments whose co-operation is necessary within the hospitals, but he should be debarred by his instructions from any interference whatever in the medical treatment or practice. 9917. Q. 9929.

This officer should be held responsible for the material efficiency of the hospitals, by which arrangement the medical officers would be relieved from all administrative duty, and be enabled to devote their whole time uninterruptedly to the treatment of the sick.

Had such an officer been appointed at the commencement of hostilities in 1854, or even later, there can be no doubt that financially an immense saving would have been effected, and, while due economy would have been regarded, a great diminution both of suffering and of mortality would have been secured.

It has been suggested to us—and we think the suggestion worthy of record—that in war the general commanding-in-chief should, if the nature of the operations permits it, be entirely relieved of all charge and responsibility so far as the general hospitals at the base of operations are concerned. They would, however, remain, as now, subject to inspection by any officer deputed by the Commander of the Forces, and duplicate returns of the state of the hospitals and progress of the patients would be forwarded simultaneously both to the Commander of the Forces at the front and to the authorities at home. In the war in the East, the great hospitals of the army were divided from the army itself by the Black sea; and from the commencement these establishments depended in a great degree, and latterly almost entirely, on direct communication with England for their supplies. They were far beyond the reach of the Commander of the Forces, or of the chief medical officer of the army, and were virtually governed from home, though the responsibility was still nominally vested in these two officers whose whole time and attention were necessarily absorbed by the administration of the army at the front. Q. 9948.

The hospitals, however, had not all the advantages which an avowed and complete separation would have secured to them. For being in one command with the army in the field they were affected by all the changes which death or promotion created at the front, and suffered all the inconveniences incidental to a too frequent change in the medical staff, by whom they were administered.

The insular position of England makes it probable that the base of operations in any war in which she may be engaged will be on the sea-board of the country in which the operations are conducted, and consequently as accessible to the home authorities as to those with the army in the field in the interior. Still the character and peculiarities of every war vary so much that it is impossible beforehand to lay down any rule on a subject on which such a decision must be made by the Minister directing the war as circumstances at the moment may dictate, but the suggestion appears to us to be one worthy to be recorded and considered.

But while offering these remarks on the government of general hospitals at the base of operations, we must declare against the retention in them, on any account, of patients who shall have so far recovered as to be in a fit state to be conveyed home in ships properly fitted for the purpose, if not likely to be fit for service in the ranks, provided, of course, that the army is so situated as to make such arrangements possible. The constant withdrawal of all patients equal to the voyage to England has the best effect on the men

so sent home and an almost equally good effect on those who remain, and who in the meanwhile have all the advantage derivable from increased space and diminished pressure on the medical officers and on the general resources of the hospital. This course was
App. No. xlviii. recommended by the Director-General during the late war, and was partially carried into effect.

We recommend, therefore, that a fixed scale of equipments be laid down for field hospitals for a battalion, a brigade, and a division.

That deficiencies or diminution of stock in this equipment be supplied on the requisition of the officer in charge of the battalion, brigade, and division, without counter-signature by any superior authority.

That all requisitions beyond the scale laid down should be countersigned before they can be available as vouchers to the issuer.

Q. 3182. That hospital marquees should form part of every field medical equipment, and the bell tent never be resorted to for the treatment of the sick, except on the line of march or on occasions when from unavoidable circumstances no better accommodation is attainable.

That a certain amount of horse and wheel transport be permanently allotted to the medical department, as to all other departments, and that the same rule be observed as regards sea transport, so far as the exigencies of the service will permit, with due regard to the wants of all other departments necessary to the administration of an army in the field.

That on the outbreak of war an officer of rank, chosen for his administrative powers, tact, and judgment, be appointed governor of the general hospitals, who should be supreme on all matters of administration, and over all the departments whose co-operation is necessary within the hospitals.

Lastly, that on the outbreak of hostilities immediate steps be taken to secure the necessary means of transport for the removal to England of such patients in the general hospitals as may be equal to the voyage, and not likely to be soon fit for duty in the ranks.

Inspections.

Q. 2659–60. 2675. 2690. Some complaint has been made to us as to the frequency and minuteness of the inspection of the hospitals by the inspecting medical officers.

Q. 4501–9. It is argued that the regimental surgeon having under his charge the health of a battalion, and being an officer of fifteen years average service, is as competent as he ever can be to discharge the duties committed to him, and that the weekly examination into every
Q. 2663–4. detail of the management of his hospital tends to relieve him from responsibility rather than to fix it upon him. The same observations apply to the staff-surgeon in a general hospital.

Q. 2673. On the other hand it is stated that without inspection, especially at unexpected times, there is little guarantee for efficiency, and these checks are necessary to secure the attention not of the zealous and efficient but of the listless and indifferent officer. We should hope, however, that the tact of the inspectorial officer would be exercised not only as to the frequency but as to the manner of conducting these inspections. Among combatant officers, where the duty of one rank is to decide and to command, and that of the others is solely to obey, and that immediately and implicitly, without any exercise of discretion in the matter, the necessity of an instantaneous obedience has naturally generated, and justifies a peremptory tone of command. But there is no analogy between their relative position and that of the higher and lower ranks of the Medical Department as regards either the division of duties between them or the character of the duties themselves. In the Army Medical Department the inspector and inspected are both men of science, and the latter is actually engaged in treating, at his own discretion and on his own responsibility, the patients who have been entrusted to him on the presumption of his competency. The assumption on the part of a superior medical officer of a peremptory tone in addressing his junior shows a want of appreciation of the dignity of the profession to which both belong. A rebuke addressed, or a doubt thrown on the treatment, in the presence of the patient shakes the confidence of the latter in the medical officer in whose hands, without any choice of his own, he is placed, and may even mar his chance of recovery.

We are satisfied that such departures from propriety, meriting as they do the severest reprobation, can be but of rare occurrence; and we have made these remarks in the belief that they will strengthen the hands of the Director-General in checking them when they do occur.

We recommend that the duties of inspectorial officers be defined by regulation, and that the regulations be printed for the information of the service.

Returns, Registers, &c.

Our attention has been drawn to the complaints, made by the medical officers, of the great amount of clerical labour thrown upon them by the cumbrous nature of the returns required of them, and the unnecessary writing caused by the unceasing and frequent recourse to the system of requisitions.

It appeared to us that the true way of diminishing the necessity of a frequent recourse to requisitions upon the purveyor is to introduce variety in the ordinary hospital diets, on which subject we have already made a recommendation, so as to comprise under the head of a diet such of the extras as are now the most usual subjects of requisition; indeed, it not unfrequently happens that a patient is continuously and almost entirely dieted on extras, which must, nevertheless, be the subject of daily requisition. As the diet table is as complete a voucher to the purveyor, this change would greatly diminish the amount of writing and the number of separate transactions involved by a recourse to requisition, without in any degree diminishing the financial check upon the expenditure, which we consider it a paramount necessity to maintain.

With the same object we have examined the admission books and the medical registers. The latter contain a record of cases which every executive medical officer is compelled to keep. The evidence before us differs as to the degree of minuteness with which they are kept. The regulation requires that an entry should be made daily on each case in the hospital, without reference to its importance; but though such a system of entry is not invariably adhered to in practice, we are satisfied that these registers are too voluminous and too indiscriminate to be of much after-value either for medical or other purposes. Many of those who compile them no doubt feel that a record so voluminous and so uninteresting is not likely to be read, and is scarcely worth much time or attention in its compilation. From the number of trivial cases entered, sufficient details cannot be given of really important cases.

It has been stated, in justification of the present minute system of entry, that these registers are useful in invaliding cases, as the light they throw on the origin of the soldier's disability enables the Commissioners of Chelsea Hospital to decide on the amount of pension to which the man is entitled. Dr. Maclachlan, however, on whom the medical examination of the invalids devolves, states that an admission and discharge book, recording the nature of the patient's disease or injury, with a column for remarks, as to its cause and severity, would be sufficient for the purpose. Q. 6069. 6076.

We find that in the Guards' hospital an admission and discharge book, having very much the character described by Dr. Maclachlan, is already in use, and with very little alteration might be adopted in all army hospitals; and in the interest of medical science we are of opinion that the registers or case books should be made the records of all important or remarkable cases, both as regards their symptoms and their treatment, and we attach value to the suggestion that extracts should be regularly made from these case books and published for the benefit of science in some civil or army medical journal. The publication would give a stimulus to the officers from whose case books the extracts were made, and the books themselves, carefully and scientifically kept, would afford to the Director-General one among other means of becoming acquainted with the degree of knowledge and attention brought to bear on this portion of his duties by each medical officer. Q. 2884. 2897–8.

We recommend the adoption of a monthly diet table, by which the necessity of re-writing every day a nominal list of every patient in the hospital will be done away with. We should here observe that these changes and simplifications of forms are but specimens of what may be done by a careful revision of the whole, a work which we have neither the time nor the means to undertake; but we beg to suggest that all the regulations affecting the army medical service require revision, many having become inapplicable owing to the changes in the organization of the War Department, and from other causes. The sanitary directions contained in the regulations are also neither sufficiently numerous nor specific, and pre-suppose a much larger amount of practical sanitary knowledge than is usually possessed by most medical men, either in or out of the army. Q. 2913–15.

Statistics.

Sir Alexander Tulloch in his evidence gives the following account of the origin of the inquiries on which were founded the statistical reports on the sickness, mortality, and invaliding of the troops, which have been periodically laid before Parliament:

"In October 1835, Lord Howick, then secretary-at-war, deemed it requisite that an inquiry should be instituted into the extent and causes of the sickness and mortality among the troops in the 6330.

West Indies, with the view of founding thereon such measures as might appear likely to diminish the great loss of life annually experienced in these colonies.

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"Under these circumstances it became necessary to refer to a very voluminous series of returns and reports, containing an historical record of the medical transactions in the British army since 1816, first established by Sir James McGrigor, and extending over upwards of 160 folio volumes. For this duty Mr. Henry Marshall, deputy-inspector-general of hospitals, and myself, were nominated on the recommendation of the director-general, having been previously engaged in publications showing the extent of mortality among the troops in the colonies, collected from such limited sources of information as were within our reach. The documents submitted for our investigation consisted principally of a series of returns furnished annually by every medical officer in charge of troops on foreign stations.

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"From these sources of information, a report was prepared showing the sickness, mortality, and prevailing diseases among the troops in the West Indies, from 1817 to 1834. On this report being submitted to the secretary-at-war in May 1836, he directed the investigation to be extended to the returns from each foreign station.

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"When an opportunity was thus afforded of rendering the report so complete, the marked difference which had been observed in the course of the investigation, between the salubrity of different stations, though in the immediate vicinity of each other, also suggested the necessity for a more minute inquiry into the nature of the localities where the troops were posted, with the view of ascertaining to what agency that difference might be attributable. This ultimately led to the preparation of the topographical descriptions now prefixed to the details of each station, which were carefully compiled from the medical records, and such other sources of information as were attainable."

On Dr. Marshall's retirement, Dr. Balfour was associated, with Sir A. Tulloch, in the work, and has contributed to the preparation of all the subsequent reports.

The benefit accruing to the army from the compilation of these admirable reports has been very great.

The late Mr. Hume moved for their production in Parliament, and the interest excited by their publication strengthened the hands of the Secretary-at-War in his endeavours to move the troops from the unhealthy districts and insufficient barracks which they then occupied, in which he was ultimately completely successful. By these measures, without doubt, a large amount of sickness and consequent mortality was prevented.

Neither in the War Office, nor in the department of the Director-General is there, however, any statistical department for the reports to which we have alluded, and to the great value of which we have borne testimony, and the country is indebted for them to the voluntary exertions of two gentlemen, one of whom is the Superintendent of Pensioners, and the other the medical officer to the Royal Military Asylum at Chelsea.

Neither are the returns from which the reports are compiled so organized as to afford reasonable facilities for the collection of accurate statistics, whether for the purpose of registration or for the advancement of medical science.

Owing to the non-existence of any officer on whom such duties should specially devolve, the returns of sickness and mortality during the war in the East became involved in
Q. 10,018. apparently inextricable confusion. The difference between the returns of deaths given by the principal medical officer, and the burial returns at Scutari alone, amounted to no less than 280 deaths in three months. There should be a registrar at the hospitals at the base of operations, whose returns would check and supply the deficiencies in the regimental returns made up at the front.

According to the method adopted in making up the weekly states in the Crimea, the Commander of the Forces could not, without an intricate calculation, obtain an adequate idea of the amount, progress, and nature of the disease and mortality in the army under his command.

To make the returns intelligible, and therefore useful, the mortality should be reduced to a recognized unit of time, and the rate of mortality per 1,000 per annum be invariably shown. The method, however, adopted in the Crimea was to state the per-centage of disease and deaths to strength at so much per week; but a mortality stated at 2·25 per cent. per week, as in January 1855, does not to inexperienced eyes appear very formidable, and certainly would not at once convey to the mind of the Commander of the Forces the terrible fact that at that rate in less than twelve months his whole force would be swept away.

The ultimate fate of an army frequently depends more on the intensity of its diseases and upon their causes than on their extent; and it is important that the Commander of the Forces should know what proportion of his disabled force is suffering from wounds and what from disease, and of the latter what proportion is attributable to that class of

maladies which experience has shown can be greatly diminished in severity by sanitary measures. For this purpose an improved classification of diseases should be adopted in the regimental "weekly states," whereby the zymotic diseases would be shown in a group by themselves; and every medical officer should be required, as is now sometimes done, to write upon the "state" the sanitary or other defects which in his opinion may have predisposed the men to such diseases.

It is true that these facts and conclusions can, with care and trouble, be worked out at home for the use of the authorities, provided the materials for the calculation are punctually transmitted to them. But for the purpose of informing the Commander of the Forces in the field, the return should be so drawn up as to convey to him at a glance the future prospects as well as the actual state of his army.

As therefore the main end of the compilation of statistics is to enable the military authorities to take immediate steps to correct obnoxious influences so soon as they are discovered, and to take measures to prevent the extension of disease and mortality, it is important that the transmission of the returns which we have described should not, when sickness breaks out, be delayed till the usual period for sending them to head quarters.

If, for example, from the unhealthiness of the locality, or the over-crowding of barracks, fever breaks out, or if from the monotony or improper composition of the ration, dysentery or scurvy appears, it is not sufficient to inform the authorities after the lapse of a few days that so many men have died, but immediate communication should be made in order that instant measures may be taken to provide the means of checking the disease, if they are not available on the spot.

In France, when an epidemic breaks out, the facts are noted day by day to the Conseil de Santé at Paris, who communicate them to the Minister of War.

Complaint has been made to us of the classification of diseases, which, being different from that used in civil life, and more especially from that of the Registrar-General, renders comparison with the mortality in civil life, if not less accurate, at any rate more difficult. Q. 7089. Q. 8980, 2905–12.

The nomenclature used in the army medical department is that of Cullen's nosology, which dates from the year 1780. Medical officers, however, are not entirely restricted to its use, nor debarred from adding in the returns the names of diseases not known to or recognized by Cullen; and a new nomenclature is contemplated by the Director-General in conjunction with a committee of the Royal College of Physicians. Q. 9546. Q. 7102.

Occasional inaccuracies also arise from the practice, generally though not invariably followed in the military hospitals, of making the diagnosis of the patient immediately on his admission. Should the medical officer afterwards have reason to think that he was mistaken, and that the patient is suffering from some other disease than that named in his original diagnosis, his only alternative, according to regulation, is to discharge the patient and re-admit him under a different head, or to treat him for one disease while his name is entered as suffering from another. In either case the return misleads the statistician, who enumerates two men with two diseases when only one man is in existence, or else disturbs the apparent relative proportion of the different diseases by which the army is affected by entering the case under the head of a disease which the patient never had. Q. 6342.

In many cases this inaccuracy is avoided by delaying the diagnosis and placing the word "observatio" opposite the patient's name, which, though it may leave some diseases unspecified, still gives rise to no inaccuracy or mis-statement. Q. 6343–4.

Dr. Farr, who is the head of the Statistical Department of the Registrar-General's office, informed us that the Registrar-General is anxious to incorporate with his periodical reports the mortality of the British army, so as to include in one view the deaths of all classes of Englishmen, whether at home or abroad, who have not, like emigrants or exiles, severed the tie which bound them to their own country. 7105–11.

The following extract from the Registrar-General's letter to the Secretary of State for War, dated February 1855, best explains the object contemplated:— Q. 7043.

"My Lord, The 26th Section of 6 & 7 William 4. c. 86. provides for the registration of the deaths of British seamen, but no provision is made for recording in this department the deaths which occur in the British army abroad. I am aware that upon inquiry at the War Office relations may obtain information as to the last returns received respecting soldiers, but the enclosed forms show that few facilities are given to the public in making these inquiries, and that precautions are considered necessary to prevent unnecessary queries, and to limit the investigation to the nearest relatives or representatives of the party. It appears to me very desirable that in this central office, which contains the record of 20,000,000 deaths, marriages, and births which have occurred in England and Wales since 1836, a record should also be kept of the deaths of all soldiers who die

abroad. I am aware that it is far from desirable to make any addition to the numerous periodical returns made by all officers commanding regiments, and I am also aware of the difficulties in time of war of obtaining the exact information as to the date and cause of death, when so many die on board transports and in distant hospitals; but I submit to your lordship that these difficulties may be easily surmounted, and that it will be a great boon to the public if arrangements can be made that I be furnished as soon as possible with a nominal return for each regiment in Her Majesty's service, of every soldier whose death has taken place in 1854 arrangements being at the same time made that similar information should be sent to me in future, at such periods as may be considered best, either monthly, quarterly, or yearly. Here, that is, in the Registrar-General's office, the names would be indexed alphabetically, and information at once afforded to the public."

This proposal was made at a time of pressure, when it was difficult to entertain it, and no step has yet been taken to carry the suggestion into effect.

It is impossible, however, to deny that advantage would result from its adoption. The births and marriages taking place in each regiment should also be included in the returns transmitted. The War Office would be relieved from the correspondence entailed upon it by the frequent inquiries as to the date of death of deceased soldiers, inquiries which are not answered until the object of the questioner has been first ascertained.

Under the arrangement proposed by the Registrar-General, his would be the only office where such inquiries would be made, whether they referred to the deaths of soldiers or civilians.

The returns of deaths which are now received at the War Office would, if transmitted to the Registrar-General, be at once placed before the public in a popular and intelligible form. A comparison between the rates of mortality in military and in civil life would thus be easily and constantly made, and, what is equally important, a comparison of present with past rates would enable the Government and the public to judge whether the health of the army is improving, and the rates of mortality diminishing, or the reverse.

Without some publicity, we fear that this subject, important as it is, may again fall into oblivion and neglect, and the evils which we have described continue unnoticed and unremedied.

The publication of the statistics of mortality of the troops in the West Indies enabled the Secretary-at-War to grapple with the evil, and apply a remedy.

Q. 8981. It is desirable to ensure to the troops at home the advantage of the same publicity, in order to secure the adoption of the measures necessary to relieve them from the continued influence of conditions deleterious to health and life.

For this purpose, the statistics of the army should be so kept as to enable the Government to judge of the comparative healthiness of every station, and every barrack; to trace sickness and mortality to their various causes, to ascertain the comparative influence of each, and to take the precautions and apply the remedies which the case may require.

An efficient statistical staff must therefore be formed, directed by a person versed in work of that description, and who will bring to bear on the subject medical, sanitary, and statistical knowledge. Such a staff ought, in our opinion, to form part of the Army Medical Department.

We should state that the household cavalry do not furnish returns to the Director-General as do the rest of the army. Being desirous of obtaining certain information regarding the extent and causes of sickness among these troops, we applied to the commanding officers for returns, but were informed that no documents exist from which they could be prepared, except in the 2nd Life Guards, who furnished the returns required.

It is as important to the household cavalry as to any other corps that their rates of sickness and mortality should be accurately known, with a view to the adoption of the measures necessary to ensure their health, and we recommend that they should in future be required to furnish, to the Army Medical Department, returns of sickness and mortality as is done by the rest of the army.

We recommend, that a nominal list of the deceased soldiers and of births and marriages in the army abroad be communicated to the Registrar-general at such periods and in such a shape as may be necessary for the object in view.

That an improved nomenclature of diseases be adopted in the Army Medical Returns, and such alterations in the classification as may admit of an accurate comparison with other returns of a similar nature; and that provision be made for the periodical publication of the statistics of sickness and mortality among the troops at home and abroad.

That forms be prepared for the use of the medical officers, which shall enable the Commander of the Forces in the field to know what is the past and existing rate of sickness and mortality in his army, what are the causes of it, and for what time at a continuance of the same rate and with what reinforcements he can maintain his army in the field. These forms should besides enable the home authorities to compare the rates of the army with those of civil life and with its own rates at previous periods.

That the household brigade be required to furnish the same returns of sickness and mortality as the rest of the army.

For the attainment of these objects we recommend the formation of a statistical branch in the Army Medical Department.

Invaliding.

In obedience to our instructions we inquired into the measures taken for invaliding and awarding pensions. This duty is discharged by the Commissioners of Chelsea Hospital, who consist of the Governor and Lieutenant-governor of the hospital, the President of the Council, the First Commissioner of the Treasury, the four Secretaries of State, the Paymaster-general, the Adjutant-general, the Quartermaster-general, and the permanent Under Secretary-at-War ; the Paymaster-general being always the president. Q. 5985.

Formerly the invalids were all brought up to Chelsea to be examined, and being billeted in low public-houses, suffered much from consequent intemperance and debauchery. This practice was abolished by Lord Howick, and none but the household troops now attend at Chelsea to be invalided, which they are enabled to do without inconvenience from the barracks where they are quartered. The invalids from line regiments in England are examined at Chatham, and those in Ireland at Kilmainham, whence their papers are forwarded, with a recommendation on each case, to the Commissioners at Chelsea, who decide on the amount of pension to which each man is entitled. Q. 5993. Q. 5992. Q. 5994. Q. 5998. Q. 5999.

The artillery invalids are examined at Woolwich.

Men invalided in the colonies and intending to settle there have their papers forwarded to Chelsea, their attendance in England being dispensed with by order of the Secretary-of-State for War. Q. 5996.

The examination in England is conducted by Mr. Moorhead, secretary to the Commissioners, and by Dr. Maclachlan, who proceed to Chatham and Woolwich for the purpose. The men receive twenty days' pay for their subsistence during the interval between their discharge and the awarding of their pension, and a free passage to their homes. The average number of men invalided during the ten years preceding the war was 4,000 per annum, last year the number was 8,943. Q. 6002. Q. 6004.

The in-pensioners of Chelsea hospital are selected from such of the out-pensioners as apply for admission. The annual vacancies in the hospital are about sixty, and the number of candidates on the list are usually about three times the number of vacancies. Those men are selected who appear most deserving in point of character, and to whom, from the nature of their infirmities, residence in the hospital would be the greatest boon. Q. 6025. Q. 6026–7. Q. 6029–31.

Mr. Moorhead states, that some expense and inconvenience would be saved, if the attendance of the men who claim pension not for disability but for length of service were dispensed with. No personal examination of the man is necessary in those cases, and when discharged he might proceed direct home from the quarters of his regiment and be spared the intervening journey to and from Chatham. Q. 6048.

Mr. Moorhead further states, that the pension warrant of 1829 enjoined upon commanding officers an accurate statement of the causes of accidents, but, the injunction having been omitted in the Warrant of 1848, many officers have imagined that it is not required, and the difficulty of deciding upon the cases has been thereby increased. Q. 6050. Q. 6052.

Dr. Maclachlan states, that practically his functions are confined to examining the man in order to advise the Commissioners as to the value of his disability, with a view to pension. Although authorized by his instructions he exercises no veto on the retention or the discharge of the man from the service, which is decided by the Principal Medical Officer at Chatham. Q. 6060. Q. 6063.

Dr. Maclachlan considers that the duties would be much facilitated were an admission and discharge book kept in every hospital on the model of the one we have already recommended for adoption, and which is to be found in the Appendix. Q. 6073. Q. 6102–3. App. lxxiv.

He also suggests, that the attendance of men with palpable disability, such as loss of a limb, might be dispensed with advantageously both to the public and the invalid, who is now exposed to a long and unnecessary journey. Q. 6112.

The duty which is in the hands of two able officers, appears to be well conducted, though it may admit of question whether the Principal Medical Officers at Chatham and Woolwich, who have already for the purpose of discharge submitted the invalid to

the strictest examination, could not perform all the duty now executed by Dr. Maclachlan, and relieve that officer from the necessity of making fortnightly journeys to Chatham, which will of course become longer and more expensive when the invaliding establishment shall be removed to Netley.

Q. 6038. Mr. Moorhead makes some suggestions as to the rates of some classes of pension, which do not come within the scope of our inquiry, but which are worthy of attention, though the alterations proposed are slight, and are, financially, unimportant.

We have, therefore, only to recommend that men claiming pension not for disability but for length of service, and men labouring under palpable disability, be no longer required to attend at Chatham.

And that the attention of commanding officers be drawn to the necessity of carefully recording the causes of any injury or disease from which men may suffer, and which may ultimately affect the amount of pension to be awarded to them.

Education of the Army Medical Officer.

The education of the army medical officer, both before and after he has received his commission, occupied much of our attention.

The existing practice is described in the following words by Dr. Andrew Smith, the Director-General of the Army Medical Department, and a member of the Commission:

Q. 2. "Any gentleman who is desirous to obtain an appointment in the Medical Department of the Army makes known his wish either to the Commander-in-Chief or to the Director-General of the Medical Department, — generally to the latter. On the receipt of such communication, a schedule is App. No. 1. forwarded to the applicant by the Director-General, with instructions to enter in it a statement of his professional education, acquirements, testimonials, &c., and to return it to the Office of the Army Medical Department. If the candidate has had the education required, and is in possession of a diploma in surgery, either of the Royal College of Surgeons of England, Dublin, or Edinburgh, or of the Faculty of Physicians and Surgeons of Glasgow, or of Trinity College, Dublin; and if some person of standing in society, not of his own family, certifies to his respectability, and to his steady and regular habits, then his name is recorded as a candidate, and he is informed that his wish will be considered as opportunities arise. If on the contrary the returned schedule does not show him to have the required qualifications, he is told so; his deficiencies are specified, and he is informed that in the event of his afterwards attaining what is wanting he may report to that effect should he still desire an appointment. If the examination of the certificates which he is required to produce prove satisfactory, he is then subjected to a professional examination by a Board composed of myself and two senior officers, and if the replies given to questions put verbally and in writing prove him to be well qualified to discharge the duties which are required of an army medical officer, he is then selected for temporary service in the General Hospital at Chatham.

"All candidates who do not come up to the required standard are rejected; the rejections are from two to three annually, and are generally in consequence of defective information in regard of Latin, or of subjects on which some of the Colleges do not or did not examine. Up to the commencement of the late war every possible effort was made to secure eligible candidates, and many of the public schools were entrusted with the power of recommending one or two yearly for commissions, provided they did so after having subjected those who desire them to a competitive examination. This plan was carried on with advantage to the public service, by the College of Surgeons of Edinburgh, but Q. 4. not to the same extent by any of the other professional bodies, and through the intervention of the former College some of our very best recruits were obtained. I extended it myself considerably when I came to be the head of the department, and I offered further opportunities to these public bodies to send the names of men who might compete. Since the termination of the war, a competitive examination has been introduced as a rule of the service, and no commissions have since been granted but to men who have been selected after such a test.

"At Chatham his capabilities are further tested by placing him in charge of sick, under the superintendence and direction of a superior medical officer; and he is from time to time reported upon by the Q. 2. principal medical officer of the establishment, and the staff surgeon of the division in which he serves; if these reports are in his favour, he is when senior recommended to fill any vacancy which may occur, and he is gazetted to a commission in the service. During this probationary period he is required to show his knowledge of disease and its treatment, his efficiency as an operator on the dead body, his aptitude for describing disease, as ascertained through the medium of periodical reports on the cases he may have treated; and he is required to become acquainted with the regulations of the service, and the compiling of returns, more especially those which are required from regimental medical officers. Each candidate at Chatham takes it in turn to make post-mortem examinations. All the medical officers of the establishment are assembled in the dead-house, and one makes the post-mortem examination, while another records what the operator observes. The gentleman who is appointed specially to superintend the pathological branch of the establishment watches how he describes, in order to see that he reports correctly. If he does not describe the appearances correctly, he is immediately stopped, and his attention is called to the points which he may either have overlooked or have improperly stated, and he is made to go over the parts again until he states them correctly; candidates are also instructed in the application of splints and bandages on a stuffed figure, in order that they shall understand exactly how to act upon the living body. These are the principal instructions which he receives while at Chatham; and upon his efficiency in doing all these things depends his appointment, as I am made aware of the efficiency of every man by the reports from the principal medical officer."

In answer to a question whether these candidates were often rejected after their probation at Chatham, the Director-General states that they have been pretty well tested before they go there, and rarely turn out inefficient. Formerly, during the time that the candidates were awaiting their commissions at Chatham, they were required to support themselves, so that a great part of the professional duty in the hospital was discharged by unpaid persons, till the Government, at the instance of Dr. A. Smith, then principal medical officer at Chatham, consented to grant to each of the three seniors six shillings a day, and the allowances of an assistant-surgeon. Q. 4.

It appears to us that considerable improvement might be effected, both in regard to the qualifications required of the candidate before he can be examined, and the mode of conducting the examination. A diploma of the London College of Surgeons, or that obtained at Dublin, Edinburgh, or Glasgow, is required indiscriminately of every candidate, and is taken as *primâ facie* evidence of his having had a fair professional education; but the diploma obtained at Dublin, Edinburgh, or Glasgow is a guarantee of a wider field of attainment than that of the London College. The former includes materia medica, chemistry, and the practice of physic, while the latter is confined to surgery alone. But the examination instituted at the Army Medical Department recognizes no difference in the candidates who bring certificates of surgical and medical knowledge, and those who bring evidence of surgical study alone. The same questions are put to all, and the practice is justified on the ground that nothing is taken for granted, but that the examination embraces all the subjects in question, whether the candidate brings his diploma from the one place of study or the other. If this view be a sound one, it seems to follow that the surgical diploma could as well be dispensed with as the medical. Either a diploma has a certain value as a test of attainment, or at any rate as a test of education, or it has not. If the latter, the exaction of it in any case is unnecessary; if the former, it seems to us objectionable that it should be exacted for one branch of the profession and not for the other, and that other the most important, inasmuch as the majority of serious cases treated in military hospitals, whether in peace or war, are medical rather than surgical. Q. 26–31. Q. 2482–5. Q. 954, 955, 1030. Q. 2452, 9124. Q. 2802, 2803.

In either case the present practice leaves the proficiency and capacity of a large proportion of the candidates to be tested by the single examination at the Army Medical Department, which makes it the more important that that examination shall be as searching and effective as it can be made, shall be carried on by examiners the most fitted by their previous practice for duties of so special and important a character, and shall be conducted in such a manner as to inspire the greatest confidence as regards both the equality of the standard of the examination upon each occasion, and its sufficiency to test not only the memory, but the ability of the candidate.

To make the examination effective for its purposes, the examiners must be men thoroughly practised in their duty, and, if possible, teachers. On this point we quote the authority of Sir B. Brodie, who says,—

"There is a great art in examining; and the great thing, so far as I have seen, for a good examination is to get a good examiner. A man practised in examining would be a better examiner than one who is not practised. Q. 520.

"At our College of Surgeons I do not find a man become a very good examiner under two or three years. I think the teachers are the best examiners. They know most about pupils. It is difficult to get good examiners who are not teachers. A man conversant with teaching and knowing the habits of pupils generally makes out in a quarter of an hour what a man is worth. If he is not so conversant, it takes him a long time to do so." Q. 522.

It is obvious that though there are in the Army Medical Department many men whose ability and attainments are beyond dispute, yet the same rule applies to them as to civil medical men, namely, that examining is an art requiring constant practice; and that, unless he is likewise a teacher, the examiner is seldom perfectly efficient. It will not be out of place to add that the Director-General states that the time which is required when the examinations are competitive cannot be spared in his office; and that if such examinations are to be continued, he will be constrained to represent to Lord Panmure the necessity of employing other officers. Q. 2458, 2798. Q. 85.

The East India Company has entrusted the examination of the candidates for its Medical Service to a body of examiners unconnected with the department into which the candidate seeks to be admitted. This system has now been in operation for nearly three years. The examination, like that in the office of the Army Medical Department, is competitive, the vacancies being filled by such of the candidates as pass the best examination, but none are admitted who do not show themselves superior to an absolute minimum standard of attainment or capacity. Q. 672. Q. 697.

Q. 679. Q. 674. Q. 676. Q. 676. Q. 2456. Q. 685, 694, 695. Q. 761.

The examination is thus described by Mr. Paget, F.R.S., assistant-surgeon of St. Bartholomew's Hospital, and one of the examiners of the East India Company. It lasts for five whole days, and is conducted by four examiners, each examiner setting the questions on his own subject at each examination. The subjects of examination are anatomy, physiology, comparative anatomy, medicine, surgery, and natural history. The examination is conducted partly orally and partly by written questions. But the main difference between this examination and that of the Army Medical Department is, that there is, in the first instance, a practical examination of every candidate, partly by the observation of patients at the bed-side, and written reports of their cases, and partly by operations on the dead body, and the application of splints and bandages, &c. It is obvious that an examination so conducted affords better means of judging the practical competency of the candidate than the mere enumeration orally or on paper of symptoms, from which his knowledge of books would enable him at once to name the disease, or describe the necessary treatment, but which symptoms he would be unable himself to detect in the patient submitted to his observation. Dr. Parkes and Mr. Paget, both being examiners for the East India Company, state that the effect of the competitive examination has been to raise considerably the general attainments of the candidates. The results of the examination show more practical knowledge derived from observation and less cramming derived from books. Dr. Parkes states that " at the first examination, though there were some extremely good men, the bulk of them did not come quite up to his expectation; but that at the last examination, where there was the large number of forty-six, there were some extremely good men, all the twenty-two that were chosen being very valuable public servants." The pay and allowances of the East India Company being on a higher scale than those of the Queen's Service, no doubt attract a better class of candidates than the latter commands; but the appearance of men with a higher standard of attainments as candidates for the same service at the later examinations as compared with the earlier, the conditions as to emolument remaining unchanged in the interval, shows, as has been found in other departments, that if the examination be efficiently conducted, its increased severity, so far from deterring, seems rather to attract not only more numerous, but also better qualified candidates.

The only objection which can possibly be advanced against the adoption for the army medical service of an examination such as we have described, and conducted by a board of examiners constituted like that employed by the East India Company, which comprises some of the most eminent of the teachers at the great London hospitals, is, that gentlemen who have themselves been wholly educated in civil hospitals, and whose studies and practice have been wholly civil, cannot have the peculiar knowledge or experience which would enable them to examine in the specialties of the military Medical Service.

Q. 67. Q. 71. Q. 523-5. Q. 766. Q. 2804. Q. 72, 122, 629-631.

The Director-General gives it, however, as his decided opinion, in which he is supported by every medical practitioner, whether military or civil, who gave evidence before the Commission, that such special instruction can be far better given after than before the examination on first admission. The present practice is to allow candidates who have studied at Dublin or Edinburgh, at which places there are endowed chairs of military surgery, to substitute, in their return of the lectures they have attended, a course of military surgery for one of general surgery. But neither Edinburgh nor Dublin presents any peculiar facilities for illustrating the teaching of the specialties of military medical practice. In the former the garrison is very small; in the latter the regimental hospitals present only the ordinary military cases, which differ in no way from those in civil life; the lectures on military surgery can therefore only be theoretical, and tend to draw away the attention from that complete course of general surgical and medical study which must form the basis of that professional knowledge, which is equally necessary to the military as to the civil practitioner, and which the former has but little opportunity of acquiring after he has once joined his regiment.

Q. 66.

The result appears to be, that the knowledge of military surgery acquired by the student who attends this course is but theoretical, and therefore of little subsequent utility while it is often acquired to the exclusion of less special, but far more important, because more indispensable knowledge. So little is the value attached by the Army Medical Department to this course, that no deviation from the ordinary subsequent instruction at Chatham is made in favour of those who have passed through it; but all are alike subjected to the same process of instruction in the specialties of military practice, so far as time and the opportunities afforded at the invalid hospital at Fort Pitt will allow.

As no professorship of military surgery exists in London or at Glasgow, the advantages of the existing chairs are at best but partial, being limited to the students of Dublin and Edinburgh. This inequality of opportunity for acquiring special

knowledge, whatever may be the merits of the course, is in itself an evil which requires to be remedied. Either the system should be extended or abolished. If a course of military surgery before the examination for admission to the service be a benefit, similar chairs should be endowed by the Government in London, and at other towns where good medical schools exist. If, on the other hand, the specialties of military hygiene can be better acquired afterwards, then these endowed chairs should be transferred to some locality where all can alike share in the advantages to be derived from them. Q. 9135.

Upon this alteration there is a concurrence of opinion among all the physicians and surgeons, whether civil or military, whose evidence was taken by the Commission. The opinion of the Director-General has already been quoted. Sir B. Brodie considers that a course of military hygiene relating to special matters connected with the military profession would be much better pursued in a military than in any civil hospital, whether in London, Edinburgh, or Dublin. Mr. Fergusson even considers the present practice at Edinburgh to have been injurious, military surgery having been accepted as a substitute for one of the courses of ordinary surgery. We have no hesitation in adopting an opinion which common sense seems to recommend, and which is supported by so great a weight of authority. Q. 516, 517. Q. 629–631.

Laying down, therefore, the principle that the soldier must be treated for the same diseases in the same manner, whether medically or surgically, as the civilian, our object is in the first place to secure that the candidate shall have had the best instruction which can be got in the only practical schools for this purpose to which he can have had access, namely, the civil hospitals; and it is the more important that he should be at first thoroughly grounded in all branches of civil surgery and medicine, including midwifery, inasmuch as the peculiarities of the service he is about to enter will, probably, during a large portion of his after life debar him from any return to studies in civil hospitals; whereas in military hospitals he will be able to acquire that knowledge of the specialties of military practice which the civil hospitals give him no opportunities of studying. In our opinion, therefore, any time withdrawn at the period of the medical student's career from the subjects taught in civil hospitals, for the sake of acquiring knowledge which can only be obtained out of them, is time mis-spent. Q. 629. 630.

If, however, we exclude military hygiene from those subjects, a knowledge of which is to be required of the candidate for the army medical service, it is not that we underrate its value, or have any intention of leaving the medical officer to pick it up by his own unassisted observation, according as his opportunities and his industry may or may not enable him to do so. On the contrary, the importance of such knowledge cannot be too highly estimated. The term military hygiene is but another name for sanitary science; but it is sanitary science applied to the prevention of disease and mortality under conditions far more varied, more threatening to health, and, above all, more sudden and novel in their character, than those which usually affect the health of men engaged in the ordinary avocations of civil life.

As Sir George Ballingall truly says, in a published letter to the late Sir Robert Peel, "It cannot be too often repeated, that it is by prevention rather than by cure that the efficiency of our fleets and armies is to be maintained." But it is prevention under circumstances of the greatest difficulty. The congregation of large masses of men together almost invariably generates disease in some form; but if, in addition to the danger so incurred even under ordinary circumstances, the physical powers are taxed to the utmost, and exhausted by unusual fatigue, while the ordinary means of repose and restoration are of necessity withdrawn, and risk by exposure to wet and cold is superadded, not only are the greatest vigilance and fertility of resource indispensable to combat dangers so formidable, but a thorough knowledge is also required of their causes, and of the means which have been already used with success to avert or overcome them. The medical officer should therefore not only be thoroughly conversant with sanitary science, but with the mode of its application to the preservation of health under every possible variety of circumstance and character. Unless he have the benefit of the experience of others, his knowledge may come too late, and may itself have been acquired at the expense of those whose lives have been entrusted to his charge. It is in a military hospital alone, and from professors specially qualified to communicate it, that the probationer can acquire the knowledge which is indispensable to the proper exercise of his profession in the army.

The habits and temper of the soldier are formed by the peculiar life which he leads, and the discipline to which he is subjected must be thoroughly understood by the medical officer.

The treatment of tropical and other diseases to which Your Majesty's troops, serving in succession in every quarter of the globe, are peculiarly liable, and with the form and

character of which the practitioner in civil life in England has little opportunity of becoming acquainted, can only be seen in any numbers, and then generally in a chronic state, in the military hospitals to which the invalid soldier is brought for observation previous to his discharge from the army.

We are therefore of opinion that, after his examination for admission is passed, the Q. 9130–1. candidate should be sent for a limited period as a probationer to the chief general hospital of the British army at home, there to become familiarized with the system and discipline of the army, and to be instructed in the specialties of military hygiene.

This, as will be seen by the evidence of the Director-General, is already partially done Q. 2. at the invalid hospital at Fort Pitt; but the stay of the probationers there has now no Q. 2230–1. reference to the amount of proficiency they may have attained, nor even to the amount of opportunity afforded to them for obtaining it, but is regulated solely by the existence or non existence of vacancies in regiments or on the staff.

Neither are there any permanent professors or instructors at Chatham, with the exception of the curator of the admirable museum at Fort Pitt, who superintends the pathological studies of the probationers. There is no lecturer on sanitary science, nor is any clinical instruction given by the bedside of the invalids. Nor is there any manual of sanitary science for the guidance and instruction of the young medical officer entering the service.

The hospital, in course of construction at Netley, is intended to receive all cases sent from foreign stations, or from the troops at home, for the purpose of being invalided or discharged for disability from the service. The whole medical staff which now conducts Q. 74. the invaliding at Chatham will then be transferred to Netley. The museum now at Fort Q. 75. Pitt will likewise be moved there, and it is contemplated to have models of ambulances, hospitals, barracks, and all the appliances necessary for a military medical school.

The only objection to this plan which suggests itself to us is, that the medical experience of the general hospital at Netley will be confined for the most part to chronic diseases. The site of the hospital being far from any existing garrison, comparatively few acute cases will pass through it. If a soldier fall sick at Chatham, Aldershott, or Portsmouth, in which places he can at once be treated on the spot, it would be unjustifiable to subject him to a railway journey for the sole purpose of giving additional opportunities of study to the medical officers at Netley.

Still, for the purpose of teaching military hygiene, and that branch of medicine which Q. 2467–8. comprises the treatment of tropical diseases, it is stated that those chronic cases returned from abroad will be more useful than acute cases of ordinary disease contracted in England could be, inasmuch as they show results of tropical diseases which the clinical Q. 665. lecturer would trace back to their causes, and, by describing their original features, enable the student to recognize and deal with them whenever he may meet with them in Q. 2469. his subsequent practice. There is no doubt that, for the disembarkation and reception of invalids, Netley possesses, from its situation on the sea beach, a great advantage over Chatham; but the number of invalids from abroad in hospital varies very much, and there may sometimes be scarcely so many patients in Netley as would be desirable for the purposes of instruction and study. Though for these reasons there are disadvantages in the position of the new hospital at Netley, as regards its distance from any great garrison, we think that it is the hospital which will afford the best opportunities for instructing young men in the specialties of military medical practice.

Q. 2805. We propose, then, that the two chairs of military surgery now in Dublin and Edin- 2806. burgh, should be transferred to the chief military hospital in England, dividing, however, 9134. the subjects of instruction between the professors; say one giving instruction in clinical and military medicine; the other in clinical and military surgery; a third professor being Q. 2465. added to give instruction in sanitary science and military hygiene.

These three professors should be permanently attached to the Institution, and should be selected, not for their experience or attainments alone, but for their special aptitude for the peculiar and important duties which they will have to perform,—duties so important, that the field for their selection should not, in our opinion, be narrowed, at any rate at first, to any one branch of the medical profession.

The Director-General recommends that the probationer should attend the courses of Q. 68. instruction of these professors for twelve months. Other witnesses have suggested six, but, as the departure of the probationer after the completion of his course depends entirely on the number of vacancies that may exist in regiments, or on the staff, there will be a further interval, varying in duration, between his examination in military hygiene on the expiration of his term of probation and his appointment to the service. We are of opinion, therefore, that a minimum of six months will be enough to exact of the proba-

tioner, after which period, provided his final examination for his commission be successfully passed, his continuance or removal will depend, as now, on the exigencies of the service.

An assistant-surgeon, after serving five years, becomes eligible for the rank of surgeon, which rank is attained on an average after ten or twelve years' service.

Formerly promotion to the rank of surgeon depended on the passing of a second examination, with a view to ascertain whether the assistant-surgeon had attained a certain standard of proficiency. This examination appears to have been discontinued owing to its unpopularity among those to be subjected to it, and who considered it derogatory to men of their standing. We are not disposed to attach much weight to this objection, dating back, as it does, to a period since which the altered tone of public feeling on the subject of examinations induces men, even of very high attainments, to submit themselves to the ordeal without a thought that they are in any way compromised by the proceeding. It is stated to us that the examinations of members of the College of Surgeons for the fellowship of that body attract more and better educated candidates than they did some years ago, and amongst them are persons who have for the most part reached a more advanced age than that at which assistant-surgeons would be required to pass for surgeoncies. It is possible, too, that an examination conducted by any three officers at different stations all over the world, may, by the apparent inequality of its results, have destroyed confidence in the practice. A more serious objection is to be found in the inequality of the opportunities of study and improvement enjoyed by the assistant-surgeon according to the station at which his regiment may be quartered. Q. 2807, 9. Q. 88. Q. 531. Q. 2814, 16..

It appears to us, however, that great advantage may be derived from an examination testing the practical knowledge of his profession which the assistant-surgeon may have acquired. In this opinion we are confirmed by the evidence of several of the witnesses who were examined before us. Sir B. Brodie, Mr. Fergusson, Mr. Paget, Dr. Parkes, and Mr. Alexander, all concurred in the advisability of an examination before promotion, if the practical difficulties to which we have adverted can be overcome. Not only, in our opinion, would it be valuable as a test of the use which a young medical officer has made of the opportunities afforded him since he received his first commission, but it would operate from the moment he joins as a strong inducement to study at a time when the tone and amusements of young officers, with whom he for the first time associates, offer the greatest temptation to idleness and dissipation, and when habits are formed which probably colour his whole after career. Q. 534–6. Q. 635. Q. 703. Q. 767–9. Q. 2459.

It has been found by experience at the Universities that the sense of an impending examination is in young men of average character the best security for attention to study at their first entrance.

After considering the difficulties in the way of the institution of the proposed examination, we have come to the conclusion that they are not insuperable.

In the navy, where a second examination has always been exacted before promotion, the practice is said to have worked well. Possibly the fact that the combatant officers in that service are likewise subjected to an examination, and that a severe one, before they can obtain their lieutenancy (the lieutenant ranking with a captain in the army), may have prevented their examination from being looked upon as derogatory by the naval assistant-surgeons. The combatant officers, too, are subjected to the same examination, whether they have had the advantage of serving in a vessel entitled by her rating to bear a naval instructor or not, though their facilities for preparation must in the two cases have been very different. Q. 220.

The naval assistant-surgeon is eligible for promotion, and therefore for examination, after three years' service in his rank. In the case of officers on a foreign station there is a local examination, after which they can be promoted subject to passing the final examination at home, when the promotion is confirmed, and ante-dated. The candidate is required, before undergoing the examination at home, to produce a certificate of attendance at a dissecting school where he shall have performed all the operations. If the candidate fails, as he sometimes does, he is remanded for another examination. Q. 251. App. No. iv. Q. 196. Q. 254.

The occasional failure establishes the value of the test. The naval examination differs, however, in character from that which would be applicable to the army.

The naval assistant-surgeon occupies a different position, as regards his duties, from the army officer of the same rank. Except when detached or having a separate charge, he neither operates nor prescribes, unless under the actual supervision of the surgeon. He is more in the position of a student and less in that of a practitioner than the army assistant-surgeon, a difference, perhaps, in part originating in the necessity he is under of getting used to the sea and sea habits before he is able to exercise his profession. On the other hand, the sailor is exposed to few of the vicissitudes from which Q. 231–4.

the soldier, whether in camp or in bivouac, suffers so much in war, but carries about
Q. 301. Q. 302. with him in every part of the world and under all circumstances his barrack, his hospital, and every comfort to which he is accustomed in peace; naval hygiene is consequently a very different science from that to which the term "military hygiene" is usually applied.

The naval examination being chiefly, though not exclusively, directed to matters in which the candidate can have had little practice, especially on board small ships, namely, to operative surgery, it becomes necessary that he should be brought home
Q. 192. Q. 224. to prepare himself in the anatomical schools for the examination which he is to undergo, which does not comprise subjects relating to hygiene. In these the army surgeon has better opportunities while on service of perfecting himself by practical observation than are offered to him at home. All the witnesses concur in the opinion that in the army the examination of the assistant-surgeon for promotion should be directed to the practical knowledge of his profession as a military medical officer. By the simultaneous issue to every station of sealed examination papers, to be opened and answered in writing in the presence of some chief authority, who will take due precaution for the non-evasion of the conditions, an identical and therefore equal examination will be secured to every candidate.

But if this mode of examination be thought insufficient, and it be held that some oral or practical examination at home is requisite, the opportunity of obtaining that would not be wanting, even in the case of officers on distant stations, if more frequent leave of absence for the purpose of study be granted to medical officers. In the navy, the medical officer has, at intervals of three, four, or five years, when his ship returns from a station, the opportunity of revisiting the hospitals and renewing his studies if he be so inclined.

Q. 782. The want of such leave is now felt as a disadvantage by the army medical officer,
Q. 2259. Q. 2475. and is given by a witness as one reason why the medical service of the Oriental and Peninsular Company is preferred to that of the Crown. It has been suggested, that after a certain service so many weeks' leave should be granted for every year served
Q. 2478–9. abroad, on condition that during such leave the officer attend some medical school, either in a civil or military hospital, of which attendance a certificate would be demanded; and
Q. 2260. Q. 5791. it is stated that many officers would gladly take advantage of such opportunities of improving themselves.

Without laying down any precise rules by which this roster for leave should be governed, we see much advantage in the proposal on its own merits, besides the additional facility which it offers for conducting the examination for promotion to which we attach much importance.

Looking at the want of variety incidental to the medical care of a small detachment, or even of a service battalion of 600 men in a healthy station, which offers but little to the observation of the medical officer beyond the ordinary diseases to which most adults between the ages of 18 and 35 are liable, we think that no opportunity of keeping up or adding to his professional knowledge should be neglected, and we consider that the army medical officer should therefore be permitted to take private practice whenever it can be obtained. The rules of the service are stringent enough to ensure attention to his military duties; and the stay of his regiment at each station is so short that it is not likely that he will be able to obtain, in competition with permanent resident practitioners, a practice so extensive as to absorb too large a portion of his time. On the other hand, the greatest practice makes the best men, by utilising the highest theoretical attainments, and the military patients will reap the full benefit of the skill and science which the army medical officer will have attained in the course of his private practice.

As regards, therefore, the qualifications to be required of the candidates previous to
Q. 2454. examination, we recommend, that in all cases such certificate as would qualify a civilian to practise medicine as well as surgery should be exacted of the candidate.

Q. 526. We think that the examination should comprise some test of general education. Sir B. Brodie attaches great importance to habits of mind created by a liberal education, which will enable a young man, when he enters the profession, to make everything out for himself better than others can make it out for him. In the words of another
Q. 959. witness, he will have learned how to learn.

It will be wise, as in the case of every new requirement in an examination, not to exact too high a standard in the first instance. With time the general education of the candidates will rise, and the standard of examination will rise with it. A striking illustration of this position is to be found in the experience of the College of Surgeons, of London, which a few years ago for the first time introduced this element into the
Q. 531. examination for Fellowships, and latterly, though after a long interval, with complete

success. On the other hand we are of opinion, for reasons which we have already given, that no acquaintance with the specialties of military medical and surgical practice and hygiene should be required of the candidates, but that such knowledge shall be supplied after the first examination and previous to final admission into the service.

We further recommend, as regards both surgical and medical knowledge, the addition of a practical to a theoretical examination. Q. 2456.

We recommend that this examination be competitive and be entrusted to a body of practised examiners, as is now done by the East India Company, and we think it desirable that, if possible, one and the same board should conduct the examinations for the medical service of the East India Company, the Army, and the Navy, to which arrangement we apprehend no insuperable difficulty.

We recommend that after the first examination the candidates be sent to a military general hospital, there to go through a course of instruction in military hygiene, and in clinical military medicine and surgery, for which purpose the necessary professorial chairs, in lieu of the two now existing in Edinburgh and Dublin, should be instituted at the principal general hospital in England.

That during their residence at such general hospital all the probationers be accommodated with quarters, and shall receive such a rate of pay as may be sufficient for their subsistence.

That the course be not less than six months previous to examination on the subjects of the course, on passing which the probationers shall be eligible for appointments, as assistant-surgeons, and that, if possible, the first appointment be to a regiment. Q. 2320–25.

That an examination in the practical knowledge of his profession as a military medical officer be passed by the assistant-surgeon before promotion to a surgeoncy.

That leave of absence be granted for attendance at hospitals and medical schools; and,

That medical officers be permitted to take private practice under such regulations as may ensure attention to their military duties.

Pay and Retirement.

By the alterations we have recommended in the system of examination by which that a candidates are to be admitted to the Army Medical Department, it is obvious higher standard of professional education will be demanded of our medical officers than has hitherto been required. At the same time, we are proposing to entrust to them more onerous duties, and to fix upon them heavier responsibilities than devolve on their professional brethren in civil life.

It becomes, therefore, most important that the conditions of the Queen's Service should be such as will attract to its ranks a due proportion of the ablest medical students, and offer such encouragement to knowledge and skill as may induce the successful candidates to devote all their energies to the study of their profession, since the whole medical staff must, in future, occupy a higher position in the organization, and exercise a wider influence in the administration of the British army than it has ever yet done.

The question then naturally arises whether the pay given, the honours bestowed, and the position awarded to the army medical officers are such as to attract to the ranks of the Army Medical Department a fair share of the best men who devote themselves to the medical profession. Q. 8635.

Upon this point we are enabled to adduce some strong, and at the same time impartial evidence, from witnesses of no ordinary authority on such a subject. Sir Benjamin Brodie being asked whether, in his opinion, the pay, the rank, the emoluments, and the general position of an army medical officer are such as to attract to the army medical profession the best students, or a fair share of them, answers:— Q. 542.

"I can only say that I do not believe that I have ever recommended any of our better class of students at St. George's hospital to go into the army, except into the Guards, where they have some advantages which they do not possess elsewhere. I do not think that there is anything in the army, as it now exists, to remunerate the better educated class of students."

Mr. Fergusson, in answer to a similar question, gives it as his opinion that though some first-rate men do enter the Army Medical Department now and then, as a rule the better men do not. This he attributes to the— Q. 642–5.

"Insufficient inducements that are held out by pay and rewards for good conduct, and he does not now advise the best men to enter the military or the naval medical service."

He adds that,—

"If greater inducements were held out, undoubtedly good men would enter; they would be advised to do so by their friends and by those who are judges."

Appendix xiv. Strong testimony to the same effect is contained in a correspondence, a copy of which will be found in the Appendix marked No. xiv., from the governing bodies of the universities and royal colleges of physicians and surgeons of England, Scotland, and Ireland, relative to the insufficiency of the present position, pay, and retirement of the medical officers of the army, which correspondence was communicated to the Secretary of State for War.

The memorials are unanimous in urging—

"The claims of the medical officers of the army to a position and remuneration more commensurate with their position as men of scientific acquirements, and the importance of their services to the country, as the only means of obtaining for the medical department of the army the services of those best qualified to render that prompt and efficient aid which the exigencies of the services constantly require."

They consider—

"That it is desirable and important that such inducements should be held out in connection with the medical department of the army, as would attract men of talent and acquirements to adopt this department of the public service for their professional life."

They go on to state that—

"The existing regulations of the service do not appear to hold out sufficient encouragement, either by present or prospective remuneration and rank, to induce students of the highest order as to education and attainments, to seek for those appointments; and of late years many of that class of students have preferred the service of the East India Company, notwithstanding the searching competitive examination, merely because the conditions of that service, as to pay and superannuation, are on a more liberal scale than in Her Majesty's forces."

These are the opinions of men forming the councils of the most eminent medical and surgical bodies in this country, and it appears to us to be impossible to controvert their statements.

We are of opinion that it would be as hopeless as it would be unjust, to demand of the army medical officers, as we are about to do, a higher standard of attainments, and to impose on them more severe professional duties, and more onerous responsibilities, without at the same time raising the stipend on which educated men, members of a scientific profession, on whose skill and assiduity the lives of our troops in a great measure depend, are now made to exist during a long course of years.

The present rates of pay and half-pay were fixed by Royal Warrant in 1840, since which they have continued unaltered. They will be found tabulated in a paper marked X (iii. & iv.) in the Appendix.

Q. 8048–56. But even the present rates of full-pay, small as they are, are not practically enjoyed as an invariable rule at the periods when they become due, inasmuch as the grant of the increased pay in each rank for length of service is qualified by the following proviso:

"The rates of daily pay for the before-mentioned ranks are to be, in future, regulated by the length of time which the officers of each class shall have served upon full-pay, according to the annexed scale; provided always, that before any officer promoted shall be entitled to claim the full rate of pay for his aggregate length of service in all ranks, he shall serve for 12 months on the lowest rate of pay of his new rank, unless he had equal or higher pay in his former rank; in which case, his rate of pay shall be that next above his former pay, if he had already served thereon 12 months, as he is to complete that period on such rate of pay, under all circumstances, before he attains the next higher pay."

Which is still further aggravated by a subsequent regulation to the effect that—

Vide War Office Regulations 1848, Staff garrison pay, p. 47. "All medical officers, however, whose first appointment in the army took place on or subsequently to the 29th July 1830, are to serve two years instead of one year before they shall be entitled to the advantages above stated."

App. No. X (iii.) In the Appendix will be found proposed scales of pay, one suggested by the Director-General, and another by Mr. Alexander.

The cost of these improved scales, as compared with the existing rates calculated on the present establishment, is as follows:—

	£	
Present rates - - - - - - - -	166,280	per annum.
Rates proposed by the Director-General - - -	217,763	„
„ „ Mr. Alexander - - -	201,293	„

Q. 8961. The scale of Mr. Alexander pre-supposes the abolition of the first-class staff surgeoncy, a subject on which we shall offer some remarks when considering the subject of promotion.

We believe that a considerable augmentation of the pay and retiring allowances, but especially of the former, is necessary to the interests of the public service. As regards the State it is difficult to over estimate the value of the services rendered to an army by an efficient medical staff; as regards the individuals, the length and great expense of the preparatory education before the student can be fitted to

discharge the very responsible duties of his profession, must be taken into account. Lastly, it must be recollected that these duties are to be performed in peace over every portion of the globe and in every climate, and in war under circumstances of difficulty and of danger, requiring other qualities besides skill and science, indispensable as those are. The nature of these services and the wear and tear of health and life to which the army medical officers are constantly exposed, may be estimated by the fact that their mortality largely exceeds that of medical practitioners in civil life. Q. 3867, 8.

With these observations we leave the adjustment of the details of the rates of pay for each rank to the executive government, feeling that they only have the means of making those comparisons with other branches of the service on which an accurate and detailed opinion on this subject can be formed; but we desire to express our entire agreement with the recommendation made by the committee of the House of Commons on this subject, and which is as follows:— Rep. Com. Med. Dep. Army, p. 3.

"That the regulation which requires officers of the department to serve in the rank to which they have been promoted, upon the pay of their previous rank, be abolished.

"That the pay of the army surgeons and assistant surgeons be increased, as may be determined by the executive government; but this Committee is in favour of 10*s.* per diem as the pay of the assistant surgeon on first appointment."

We are also of opinion that the granting of a limited number of good-service pensions to the officers most distinguished by their zeal and efficiency is due to the department, and will act as a wholesome stimulus to its members. Q. 7565.

We must also add, that we consider compulsory retirement at 65 years of age for the inspectorial ranks, and 55 years of age for the executive ranks, is absolutely necessary for the efficiency of the service. Q. 7565–9. Q. 7577–80. Q. 7675–84.

It is not, however, by money alone that the ablest and most accomplished medical men will be attracted to the army medical service: the rank, the position, and the honours which can be attained, constitute perhaps the strongest inducements to the highest class of minds.

Promotion.

The following summary of the grievances complained of by the army medical officers, so far as regards promotion, rank, and rewards, is taken from the memorials which issued from the army in the East in the year 1855. Rep. Com. Med. Dep. Army, App. p. 295.

The memorial of the assistant-surgeons of Her Majesty's army serving in the Crimea, dated July 31, 1855, sets forth:—

"That whilst the assistant-surgeon, having first arrived at the age of 21, must have also undergone a long and expensive course of professional study previous to assuming the subaltern rank allotted him, one wholly unworthy of the dignity of the profession to which he belongs, the executive officer may, without any special preliminary education, join the army at a very early age, and within the short period of two years attain a rank for which a medical officer can become eligible only after a lengthened period of service.

"That the much more rapid promotion of executive than of medical officers during time of war implies also an undeservedly low estimate of the exertions of the latter, who share the dangers of battle, privation, and climate, and are exposed to additional risk of life from constant intercourse with the wounded and diseased, but, unlike their fellows, reap from their services, however distinguished, neither advantage nor reward, in consequence of the long period of service enjoined by the 'regulations' before promotion.

"That promotion appears at the present time to be conducted on no definite plan, and is not regulated, as it should be, by consideration of merit, seniority, or service in the field."

In another memorial from the surgeons serving with the army in the East, and dated August 10, 1855, we find the following expression of opinion on the same subject:— Ditto. App. p. 304.

"With regard to promotion, we trust your Lordship will not consider us presumptuous if we take the liberty of pointing out to you the necessity and expediency of some fixed principles being established whereby it should be regulated.

"We respectfully submit that a surgeon's relative rank should be that of a field officer after a certain amount of full-pay service; nor would it be too much to expect a participation in those honorary rewards from which at present we are virtually excluded, partly, we suppose, from an idea that we are members of a civil department, although exposed to the fire of the enemy in the execution of our duties.

"We submit that we ought to be classed amongst the purely military branches, and reap our share of the honours accorded to them; the exclusion from which, in all campaigns, we most deeply feel."

We propose to discuss the subject alluded to in the last two paragraphs under the head of "Relative Rank."

Q. 7378. 7416. We are informed by the Director-General that, except in the case of distinguished service in war, when there is no physical or professional unfitness promotion from the rank of assistant-surgeon to that of surgeon goes invariably by seniority. But this promotion is not given to seniority reckoned from the date of first appointment according to the Army List, but to seniority within the limits of the station or group of stations where the vacancy takes place. The Director-General explains, that owing to the Q. 7408. distance from one another, and from home, of the various colonies in which the troops are quartered, the cost of moving the senior assistant-surgeon to or from a distant colony would, in the opinion of the Treasury, be so great, while the interval during which the regiment would be deprived of the services of the newly-promoted surgeon would be so long, as seriously to inconvenience the public service.

This delay might possibly extend over a period of nine months, should the vacancy occur in Canada and the senior assistant-surgeon be serving in New Zealand, or vice Q. 7435–8. versâ, the promoted officer being allowed one month in the colony in which he has served, and another in England to settle his affairs. But this is an extreme case, and is stated Q. 7462. to be one which has never occurred.

To obviate this inconvenience, the Director-General maps out the different parts of the globe, and the promotion goes by seniority within the groups of stations which have App. No. xv. been constituted a district or circle for this purpose. Thus, the American colonies with Bermuda form one station. Jamaica is a station in itself. The Windward and Leeward Islands form a third. The Mediterranean, including Gibraltar, Malta, and the Ionian Islands, a fourth. The Cape and Mauritius form a station, and the principal Q. 7443–50. medical officer at the Cape (but no officer of lower rank) is eligible to be promoted Q. 7451. to India or Ceylon; that is, a deputy-inspector at the Cape is eligible to be promoted to India or Ceylon, but the regimental or first-class staff surgeon are not.

On the other hand, no officers in India, of any rank, are available for vacancies at the Q. 7455. Cape, the Indian appointments being the best in the service. Australia, Van Diemen's Land, and New Zealand form a station, and to them as well as to Ceylon the same advantage is extended, with regard to promotion to India for deputy-inspectors, which is allowed to the Cape station.

Q. 7444. This grouping of stations has never been promulgated. Indeed, the Director-General Q. 7447. states that "it has not been held to invariably in his time. It has not been laid down so absolutely that it has been always observed." Gibraltar was at one time excepted, and constituted a station by itself, because, yellow fever having broken out there, it was thought fair by the Director-General, that the senior in the garrison where the medical officers had encountered the labour and the danger should be entitled to any vacancy which might occur.

Again, Ceylon was sometimes considered, by the late Director-General, as a part of Q. 7760–2. the same district as the Mauritius, and an officer serving in Ceylon has obtained his promotion through a death-vacancy in the Mauritius; while, at another time, an officer in Q. 9426–7. the Mauritius was promoted at the Cape, although two seniors were at the time serving in Ceylon.

The Director-General states that, when the senior assistant-surgeon on the station has Q. 7766. served but a short time beyond the period which renders him eligible for promotion, he enlarges the station to meet the special occasion, so as to include some officers of Q. 7423–4. longer standing. There appears, however, to be no defined period of service, within which the assistant-surgeon loses the benefit of his seniority in the district in which he is serving; nor is any rule on the subject promulgated, except the one by which, under other circumstances, the assistant-surgeon is made eligible for promotion after five years' service.

Q. 7406. But in the case of vacancies created not by death but by promotion, the whole of this machinery is dispensed with, and the senior assistant-surgeon on the Army List is promoted without reference to the distance from which he may come or the inconvenience to which the regiment into which he is promoted may be exposed by the unavoidable delay.

The Director-General informs us that, with a view the more completely to maintain the principle of seniority, or rather to compensate for unavoidable departures from it when Q. 7464–70. special promotions are given in consequence of service in the field or from other causes, he takes the first opportunity of promoting those who had been passed over by the special promotions. Thus many medical officers who had distinguished themselves by their zeal or skill during the war in the East, or who had served continuously through all the hardships and dangers incidental to those campaigns, were rewarded by promotion irrespective

of seniority, and their seniors who, being in Australia or elsewhere during the same period, had had no such opportunity of distinction, would likewise be promoted to compensate them for their ill fortune. Had this principle been always carried out, the result would have been that when Gibraltar was excepted from the Mediterranean, and constituted at station in itself, in order to assure to medical officers at Gibraltar the promotion to which they were entitled for their risks and exertions during the prevalence of yellow fever, the assistant-surgeons at Malta and the Ionian Islands should likewise have been promoted to compensate them for not having had the opportunity of distinguishing themselves at Gibraltar.

When a reduction takes place at the conclusion of war, the usage in the Army Medical Department is to reduce, not the juniors of each rank, as in other branches of the service, but the juniors dating from the first entry into the service, irrespective of their seniority in the rank they have acquired. Q. 7495-7504.

This rule is designed to counterbalance the irregularities or inequalities which the previous promotions on the system we have described may have created.

By this arrangement, a medical officer promoted for distinguished service in the Crimea might be reduced, while another promoted as a compensation for his having had no opportunity of distinguishing himself, though promoted after the other, would, in right of his original seniority in the service, remain on full-pay, and the man who had successfully encountered both the danger and the hardships of war would be in the worse position. Q. 7870.

A reference to the return marked No. xvi. in the Appendix will show how irregularly, even before the war, these regulations acted on a rank professedly promoted by strict seniority. Indeed, many of the medical officers whom we examined stated that they were unable to say whether the principle of seniority or of selection regulated the promotions in the lower ranks, and that they could not explain, because they had been unable to ascertain, what the regulations as to promotion were. App. xvi. Q. 2284. Q. 8762. Q. 7734. Q. 7752.

The Director-General states that these rules are very complicated, and have never even been reduced to writing in any systematic form, but are well known to himself, and are to be found scattered over a correspondence of 40 years. Com. A.M.D. Q. 4552.

It appears to be the practice of the Director-General, who is anxious to prevent any general rules from operating harshly on individuals, to avoid such a result by a fresh enactment to meet each special case as it arises. The chief advantage derivable from the principle of seniority is the certainty it gives to every man that he will be promoted in his turn, but no such certainty can be felt under the system we have described, while at the same time the stimulus which is supplied by selection is entirely wanting. Q. 7498.

Practically the result has been that, in the lower ranks the principle of seniority, so far as it consists in promoting each man in his turn, according to the date of his entry into the service, is nullified, and the rules by which the Director-General seeks to compensate for such departures from the strict principle of seniority and equalize the chances and the career of each officer being unknown to the service, dissatisfaction has been created, and sometimes even motives have been imputed, which a full explanation of the history of each case would often show to be entirely unfounded. Q. 7867. Q. 8149-57. Q. 7479-82. Q. 7425. Q. 9466. Q. 7919.

To us it appears that such a result not unnaturally attends a system where so much explanation is necessary, and so little can be given, and we doubt whether any large department can be satisfactorily administered except on some simple and intelligible principles, which should be patent to all, and which should not be departed from, except on occasions previously specified.

It is true that all general rules must occasionally press hardly on individuals, but at the same time they inflict no individual injustice, though they may produce individual hardships, for all are aware of the existence of the rule, and of the effect it may have; and the man who suffers, though he may complain of the rule, feels no resentment against his chief, who he knows is bound by it, and is not the author of the hardship he undergoes.

We are not aware that there is any branch of the executive, except the army medical service, in which promotion is awarded by the head of the department, unguided and unrestrained by any regulations which are binding upon him. In the civil departments, the promotion of the clerks is regulated from time to time by the Treasury. In the navy, the First Lord administers promotion according to certain fixed rules and regulations laid down by Order in Council, and from which he has no power to depart. In the army, the Commander-in-Chief is in like manner bound by Royal Warrants granting him powers which he has no authority to exceed, and laying down the most precise rules to guide and restrain him in the exceptional cases in which he is empowered to use his discretion; and we conceive that justice, both to the department and to the

Director-General who administers it, requires that clear rules for his guidance should be laid down by proper authority, and promulgated in the ordinary way. We believe that much of the dissatisfaction prevailing in the department will be removed by this
Q. 7425–6. course, which will also relieve the Director-General of much responsibility and odium, now unduly thrown upon him.

As regards the future, the Director-General suggested for our consideration that promotion from the rank of regimental or second-class staff surgeon to that of first-
Q. 7376. class staff surgeon be made by selection as now, but that all subsequent promotions from
Q. 7382. that rank upwards to deputy inspectors and to inspectors-general be by strict seniority,
Q. 7387. unless the officer be evidently incompetent.

As the Director-General considers the rank of first-class staff surgeon to be generally
Q. 7398. an inspectorial or administrative rank, there appear to us to be grave objections to this suggestion, by which those who on trial show no peculiar aptitude for the duties devolving upon them would, equally with those who do, be promoted to charges of still greater difficulty and responsibility.

It appears to us that an adherence to the rule of strict seniority in the lower ranks, with some exceptions which we will afterwards specify, and strict selection in the upper ranks, constitute, upon the whole, the system most likely to work beneficially for the interests of the public service.

To attract a fair proportion of the best medical pupils to the military service, two
Q. 4574. conditions are necessary,—certainty of a competency and the hope of distinction. Men
Q. 554. who enter a profession after a long and expensive course of study, and who give proof of their proficiency by subjecting themselves to the ordeal of a competitive examination, have a right to expect that if their professional and personal conduct be unobjectionable, they shall have guaranteed to them the prospect of rising to a rank in the service which, while assuring to them the means of subsistence, shall give them a certain standing and position in society. On the other hand, the hope of rising by merit or distinction to high
Q. 547. rank, or to posts which, though unattainable except by a few, confer on those who succeed
Q. 556. the highest honours which the profession has to give, operates strongly at the age at which men choose a profession, and when each is sanguine of success in the race in which he is about to engage. We believe that some of the most ambitious would be deterred from entering the service, if, by a uniform adherence to the sole principle of seniority through all ranks, the prospect of rapid rise to the higher grades ande moluments of the profession were denied to energy and to talent.

No doubt at a later period these feelings are less prevalent, and greater certainty with less effort would be preferred by the majority of the profession. In fact it must be the interest of the majority of every profession to equalize the chances of all to the prizes which otherwise can only fall to the more energetic efforts of the few. But the first consideration must be the efficiency of the public service, and for this, as it appears to us, selection for the higher ranks and employments is indispensable. Even if every man were equal, as regards ability and attainments, yet means must be found to pass some men sufficiently rapidly through the lower ranks to secure in the higher the services of men still in possession of physical vigour for the discharge of the important duties to be imposed upon them. If some such means be not found, all would advance together, and by the time they reached the highest ranks all would be unfit through age and infirmity to discharge their functions. It has been proposed to obviate this objection and to quicken the stream of promotion by a large extension of liberal retirements to the senior officers. But no minister would make and no House of Commons would listen to a proposal largely to augment the annual burdens of the country for non-effective services when it can be shown that the same results may be obtained (and, as some think, even more advantageously) by a well-regulated system of selection, which costs nothing, and brings the ablest men to the head of their profession while their physical energy is still unimpaired. That selection may not always be judicious, and that mistakes will sometimes be made, is undeniable and inevitable. But when it is asserted that selection from 50 or 100 men will not always produce the ablest, it must
Q. 7315–16. be remembered that seniority does not so much as attempt to do it, but knowingly and without hesitation promotes, perhaps the most ignorant and the least efficient of the whole.

With these opinions, we should much regret to see the power of selection parted with in any rank in which it is now exercised, and we recommend that promotion from the rank of regimental and second-class staff surgeon to the ranks above be invariably by selection, and that promotion from assistant surgeon be by seniority, except in cases of distinguished service, such as would not only justify but require immediate

promotion irrespective of seniority. Such departures from the rule of seniority should, however, as in the case of combatant officers promoted by selection for distinguished service by the Commander-in-Chief, be guarded by similar formalities to those laid down in the promotion warrant of 1854; and the Commander-in-Chief, in forwarding to the Secretary-of-State the name of the medical officer thus exceptionally promoted, should state the services for which the promotion is granted, in order that they may be published in the Gazette.

As regards ordinary promotions by seniority, we doubt the necessity, now that communications are so much shortened, of retaining the separate groups of stations within which only, in the case of death vacancies, the promotion is to take place, the more so as a contrary practice is already pursued in the case of other vacancies; or if it be found necessary still to retain any divisions, it appears to us that two groups, one to the east and another to the west of the Cape, the former including the Cape itself, would be sufficient for the purpose in view.

In the latter case the antedating of a few commissions would still be necessary. Q. 7421.

Every full surgeon therefore would, unless he had been specially promoted for merit, 7440. stand in his rank in the same order of seniority with his first entry into the service.

Above that rank his rise would depend on his ability and character; and it appears to us that, under these circumstances, the complication arising from reckoning seniority in two ways, namely, seniority in the rank and seniority in the service, would be done away with, and, as in other branches of the service, no seniority would be recognized except that of rank and the date of commission in that rank. It is only in questions of pay and of retirement, where age, and not rank, is the cause of unfitness, that seniority in the service should be considered.

It seems unjust, when a man has been rewarded for his services by early promotion, to deprive him subsequently of any of the advantages which he has earned, in order to compensate those whom, by his own exertions, he passed in the earlier part of his career.

On reduction, the junior officers in each rank would then be the first put on half-pay, and subsequently the seniors of the reduced officers in each rank would be the first restored.

Much difference of opinion prevails as to the value to the service of the rank of first-class staff surgeon, and as to the character of the duties which ought to attach to it, or which are now performed by the officers holding that rank.

The Director-General considers that the rank is generally not executive, but inspectorial, that is, that the first-class staff surgeons for the most part do not treat disease, Q. 7398 but inspect those who do, and take their share in the administration of the hospital; and he considers the rank valuable as enabling him to appoint to stations too small and Q. 7668. unimportant for a deputy-inspector, an officer who can discharge all inspectorial duties at a lower and more suitable rate of salary.

At present the army medical department is divided into five ranks, namely, inspectors- Q. 7256. general of hospitals, deputy-inspectors, first-class staff surgeons, second-class staff surgeons, ranking with regimental surgeons, and, lastly, assistant surgeons.

Of these five ranks, the first two are purely inspectorial, the third of a mixed character, Q. 7365. and only the last two purely executive.

It was urged before us, that if five ranks be maintained, the majority, at any rate, Q. 7703. should be executive.

Some even assert, that a first-class staff surgeon is already an executive officer, the fact being, that in the late war they were ordered so to act in order to strengthen the executive medical staff.

When there is no practical distinction between the duties to be performed, as is the case in the civil medical profession, no distinction of ranks is recognized, but in a military service where inspectorial and administrative duties are required, the latter almost wholly foreign to the profession of a medical man, some distinctions of rank are necessary. It appears to us, however, that they cannot be too few, and as all the changes we have proposed in the organization of our hospitals will tend to reduce if not entirely to supersede the mere administrative duties which have been hitherto, as we think, improperly imposed on medical men, and as the higher standard of acquirement proposed to be exacted of candidates for the Army Medical Department, and the additional means of instruction to be afforded them, will make inspection less difficult than heretofore, we are of opinion, that if one of the five ranks can be suppressed, it should be one of the inspectorial, and not one of the executive ranks.

We consider that the balance of evidence is in favour of the abolition of the first-class staff surgeoncy as a separate rank, but that the regimental surgeon and the staff surgeon (now called second-class staff surgeon) should after 20 years' service be called surgeon-majors, with a small addition to their daily pay.

In the few cases, which the increased concentration of our troops renders every day rarer, where the smallness of the force will not justify the appointment of a deputy inspector, the senior medical officer on the station could perform the slight amount of inspectorial duty required; on the other hand, justice to the department dictates the appointment of a deputy inspector whenever the force is sufficient to warrant the presence of an officer of that rank.

Q. 7401. In the two upper or inspectorial ranks, we hold that the public interests require that promotion should go by selection of the ablest and most efficient officer, and, in recommending to the Commander-in-Chief, who is responsible for all promotions, the officer to be promoted, we are of opinion that the Director-General should always notify the relative position of the officer in his rank and the grounds on which the selection is made. The Director-General states that this course is occasionally pursued by him, and if it were invariably adopted, and the grounds of each recommendation were recorded, we think that much mis-interpretation, and consequent dissatisfaction, would be avoided.

These selections would, of course, be founded partly on personal observation, partly on the case books of the medical officers, partly on public reports and despatches, and partly on the confidential reports, made by the principal medical officer on each station, of the character and capabilities of the officers serving under him. As the question of confidential reports has excited a good deal of attention, and was the subject matter of so much complaint before the committee of the House of Commons on the Army Medical Department, that the committee made special mention of those reports, and recommended that the practice of the Director-General should be assimilated to that of the Adjutant-General regarding them, we thought it our duty to ascertain from the Director-General
Q. 7627. how such reports are dealt with. The Director-General assures us that no officer can
Q. 7648, 9. now be injured by a confidential report affecting his character, of the existence of
Q. 5689–91. which he is not aware. Sir John Hall, in his evidence, states that he had never made a confidential report against a medical officer without informing the officer reported against of the fact and of the substance of the report, and he considers such a course the only one which can be taken compatibly with fairness and justice to the officer affected. We have no evidence to show whether this is an universal or even a common practice, or one adopted by Sir John Hall and by him alone, but the Director-General assures us that any
Q. 7630. report injuriously affecting the character of an officer is always, either in extenso or in
Q. 9391–2. substance, communicated to the officer reported against, in order that he may offer any
Q. 7635–6. explanation in defence which he may wish to make. We entirely approve of this
Q. 8263–6. practice, which appears to us to be the only fair and honourable one which can be
Q. 8822. adopted. The inspecting officer is more likely to report unreservedly when the contents of the report are not published but communicated only to the officer affected by them, and the inspected officers may feel confident that no secret charges can be made against them which would stop their promotion without their being afforded an opportunity to rebut them.

We recommend that the rules of promotion for the Army Medical Department, with the modifications which we have proposed, be laid down in a Royal Warrant, together with the new rates of pay and retirement.

Roster of Service.

Q. 7896. Several witnesses have strongly urged the establishment of a roster for foreign service according to which every officer of the medical staff would go abroad in his turn and have an equal share of foreign service, and the practice of the medical department of the Ordnance previous to its amalgamation with that of the army is adduced in support of the proposition.

In the lower ranks it is possible that a roster, such as has been described, might be established and in time of peace maintained, and no doubt its observance would be a source of great convenience to the officers of the department; but we must make this qualification to any recommendation on the subject, namely, that the amplest discretion must be vested in the Director-General to select for each station the principal medical officer whom he may think from experience and character likely best to discharge any peculiar duties which may attach to the medical charge of that particular station.

Relative Rank.

Complaint has been made that the relative rank conferred upon medical officers is not in all the grades so high as the value and importance of the department would seem to justify. An inspector-general ranks as a brigadier-general, a deputy inspector as a lieutenant-colonel, a first-class staff surgeon as a major, a regimental and second class staff surgeon as a captain, and an assistant-surgeon as a lieutenant.

It has been suggested, inasmuch as the medical officers remain for a great length of time in the same grade, and the combatant ranks exceed their own in number, that an increase of relative rank ought to be granted to the medical officer after a stated amount of service in each grade. That an assistant-surgeon, after 10 years service, should rank as a captain; the surgeon, after 15 or 20 years service, as a major; that the deputy-inspector, being the second rank in the medical service, should on appointment at once rank as a lieutenant-colonel, and that like a lieutenant-colonel he should, after three years service, rank as a colonel; and that an inspector-general, being the chief medical officer of an army in the field, should rank as a major-general. Q. 7591. Q. 7696. Q. 7943. Q. 8964.

A more serious complaint which has been urged is that the value of this relative rank and the practical advantages which it is meant to confer on the individual holding it are undefined, and vary according to the interpretation which commanding officers may put upon it. That relative rank should confer any military command is, of course, out of the question, and no medical officer would for one moment contend for an authority for which he is manifestly not qualified, and with which, even if qualified, he could not be invested without detriment to the public service; but medical officers represent that, if ordered to sit on courts-martial or on mixed boards, they should sit according to their relative ranks and the dates of their commissions. There are no regulations in the Queen's service either one way or the other on this subject, and usage appears to vary, some officers stating that they have sat as juniors to the junior combatant officer, however senior they might be to him in relative rank; others that they have sat according to their rank and the dates of their commissions, but that the precedence was granted to them more as a matter of courtesy and good feeling than of right. Q. 7592. Q. 7944–50.

It is stated in evidence by Dr. Arnott, a surgeon in the East India Company's Service, that prior to the year 1847–48, he and others sat on committees and boards in the order of their rank; but in that year, a regulation was issued to the effect, that medical officers, however high their rank, should sit on boards as junior to combatant officers, however low their rank. Q. 8340. Q. 8344. 8357.

In consequence of this change, the Indian medical officers avoided as much as possible positions which exposed them to an indignity which they keenly felt; and Dr. Arnott gives it as his opinion, that if the regulation be maintained, medical officers should be relieved from all duties of this description. Q. 8363.

In a minute upon the reformation of the Indian army medical service, written shortly before leaving India, the late Governor-General Lord Dalhousie makes the following remarks upon this regulation:— App. No. xvii.

"35. But the most galling, the most unmeaning and purposeless regulation, by which a sense of inferiority is imposed upon medical officers, is by the refusal to them of substantive rank.

"The surgeon and assistant-surgeon rank invariably with the captain and lieutenant, but the rank is only nominal wherever medical officers and others are brought together on public duty; the former has no rank at all, and the oldest surgeon on the list must, in such case, range himself below the youngest ensign last posted to a corps.

"36. It is impossible to conceive how such a system as this can have been maintained so long, on the strength of no better argument than that 'it has been,' therefore 'it ought to be.'

"It is impossible to imagine what serious justification can be offered for a system which in respect of external position postpones service to inexperience, cunning to ignorance, age to youth; a system which gives a subaltern who is hardly free from his drill precedence over his elder, who, perhaps, has served through every campaign for thirty years; a system which treats a member of a learned profession, a man of ability, skill, and experience, as inferior in position to a cornet of cavalry just entering on the study of the pay and audit regulations; a system, in fine, which thrusts down grey-headed veterans below beardless boys."

It seems to us impossible to deny the justice of these observations. It may be advisable to abstain, save in cases of necessity, from summoning medical officers to sit on courts-martial; yet there are occasions when their presence may be of great value to the court, and on mixed boards their assistance is often indispensable.

It appears to us clear that if the medical officer is to discharge these duties, he is entitled while discharging them to the respect due to his rank and to the commission which he holds; and though in the case of courts-martial there may be reasons why

the senior combatant officer present should always be the president, we hold that, relatively to every other member of the court, the medical officer should sit according to his rank and the date of his commission in that rank. On the same principle medical officers, when supplied with quarters by the public, should have a choice according to their relative ranks; and the allowance of prize-money, batta, allowances to heads of departments on foreign stations or with armies in the field, coals, and candles, should be regulated by the same rule.

We entirely concur with the following recommendations made by the Director-General,—

Report Com. Ar. Med. Dep., App. p. 317.

"The number of servants allowed to medical officers to be determined according to their relative rank; that is, each medical officer to have the same number as is allowed to the military officers with whom he ranks.

"The observations in reference to servants will equally apply to the case of horses and forage allowance.

"Surgeons of regiments should not have to pay a daily stoppage on account of the forage allowed them for their horses.

"At present the surgeon of an infantry regiment is subjected to a deduction from his pay of $8\frac{1}{2}d.$ per day in consideration of the forage he receives; whereas the lieutenant-colonel, the majors, and the adjutant, who are like him allowed forage, pay nothing. This appears an anomaly; if all require horses for the due discharge of their duties, it seems unreasonable that the surgeon should be differently treated to the combatant officers."

The following is the scale of relative rank proposed by the Director-General:—

"Assistant-surgeons under 10 years' service as lieutenants, according to date of commission.

"Assistant-surgeons above 10 years' service as captains, but junior of the rank.

"Surgeons under 15 years' service as captains, according to date of commission.

"Surgeons above 15 years' service as majors, but junior of the rank.

"Staff surgeons of the first class, under 20 years' service, as majors, according to date of commission.

"Staff surgeons of the first class, above 20 years' service, as lieutenant-colonels, but junior of the rank.

"Deputy inspectors-general, under 25 years' service, as lieutenant-colonels, but junior of the rank.

"Deputy inspectors-general above 25 years' service, as colonels, according to the date of commission.

"Inspectors-general, as brigadiers-general, according to date of commission."

If the rank of first-class staff surgeon be abolished, the surgeon-major would have the same relative rank as the present first-class staff surgeon.

We think, however, that all officers of the inspectorial grades should rank not as juniors, but according to the dates of their commission; and that an inspector-general, being principal officer of an army in the field, should rank as a major-general.

The officers of the Army Medical Department complain that they are not considered to be entitled to the same honorary distinctions as combatant officers, or, at any rate, do not receive them in the same proportion. There is, perhaps, no profession affording more opportunities than theirs of individual distinction, founded on professional superiority, and none in which it is more important to the interests of the army that individual zeal and exertion should be stimulated to the utmost.

We are informed that by the statutes of the Order of the Bath no one can receive its honours unless he shall have been mentioned in a public despatch for services rendered before the enemy. But the most arduous and the most dangerous services of medical officers are not always, even in war, rendered before the enemy. They have to strive with an enemy more dangerous than man. In the almost pestilential wards of Scutari the exertions required were more continuous, the danger was greater, and the honours and rewards to be obtained were fewer, than at the front before Sebastopol. The mortality of the medical officers at Scutari was not much exceeded by that of the combatant officers with the army in the Crimea, but the survivors are debarred from receiving those honours which, fortunately for the country, are prized more than either rank or emoluments.

Q. 8978. Q. 8838.

It has been proposed that a limited number of the most meritorious officers of the department should have the honour of being named honorary physicians and surgeons to Your Majesty, a distinction which it appears to us that the profession eminently deserves.

To another subject affecting the respect paid to medical rank, we think it our duty to make some reference, inasmuch as it has been the cause of pain and irritation to the friends of deceased medical officers at a moment when every fair consideration should be shown to their feelings. The existing regulations sanction the burial of a deceased regimental medical officer with the military honours allowed to officers of his relative rank, whilst in the case of staff medical officers those honours are limited, firing over their graves being forbidden. This practice has always been regarded by staff medical officers as

Q. 7963–71.

an act of injustice; and some, when dying, have requested to be buried privately, from a dislike to have it supposed by soldiers that they were inferior to other officers. We think that all fair grounds for discontent on such a subject should be removed, and we recommend that every deceased medical officer, whether regimental or staff, should be buried with the military honours that attach to his rank.

Our attention has been called to other and minor points in which the army medical officers consider themselves aggrieved, as regards rank and precedence.

For example, in the Army List, the medical staff is placed in the list of each regiment after the other members of the regimental staff, though the relative rank of the surgeon is always higher than that of the adjutant, the quarter-master, and the riding-master, and frequently is higher than that of the pay-master.

Again, in the General Army List, the department is placed after others which, though most important and respectable in themselves, can scarcely be held upon an equality with a scientific profession which stands justly high in every civilized society. Q. 8294.

We are aware that these matters may appear trivial to many who consider that the respect in which the medical profession is held places it above the necessity of seeking or accepting the adventitious aid which mere patents of precedence can afford. But in the military service rank is everything; there exists no authority without it, and a civil department, which by its connection with the army has acquired a semi-military character, cannot maintain its position while debarred from the rights and privileges appertaining to it. Small, therefore, as these matters may appear, still they are taken as indications of the degree of respect with which the Government regards the medical department, and of the estimation in which it is intended by them that its officers should be regarded by others.

As regards uniform, we are informed that some medical officers wish for an alteration, obliterating the peculiarities, such as the black plume and sash, which distinguish the medical from the combatant officer. It must be obvious that in and after an action it is of the utmost importance that a medical officer shall be known by some easily-recognized distinction of costume; and we must add that medical officers who wish thus to be made undistinguishable from combatant officers can have but little appreciation of the dignity of their own profession.

We recommend that the rank of first-class staff surgeon be abolished, and that after 20 years service, surgeons, whether attached to regiments or the staff, should be styled surgeon-majors, with a small addition to their pay.

That the rule of seniority be strictly maintained in the promotion of assistant-surgeons to the rank of surgeons, except in case of incompetency or misconduct; that no exception be made to this rule save for distinguished conduct, when the services for which the officer is promoted shall be published with his name in the Gazette, and that the seniority be that in the army, without reference to the station on which the officer to be promoted may be serving.

That the promotion to the ranks of deputy inspector and inspector be by selection for merit; that in the recommendation to the Commander-in-Chief the Director-General shall state the position on the Army List of the officer recommended and the grounds of the selection; and that all surgeons shall be eligible for promotion to the rank of deputy-inspector.

That any confidential report by which the character of an officer is unfavourably affected shall be always communicated to him, and an opportunity given him of offering his explanation in defence.

That the relative rank of the army medical officers be revised, and that such rank carry with it the same advantages as to quarters, allowances, precedence, &c. &c., as substantive rank, and that except in the case of the presidency of a court-martial, medical officers should sit on courts and on mixed boards according to their relative rank and the dates of their commissions.

That a limited number of medical officers of distinguished merit be appointed honorary physicians and surgeons to Your Majesty.

That the Army Medical Department be held entitled to the same share of honours and rewards as combatant officers of the same rank.

That in the Army List the medical department should have precedence of the commissariat, and that their names should appear according to their rank, with the dates of their commissions in the list of the regimental staff, and that the whole regimental staff shall be placed before the list of captains.

That a limited number of good service pensions be granted to medical officers of distinguished service.

Lastly, that the regulations as to pay and retirements, promotion, rank, honours, and rewards, be embodied in a Royal Warrant for the regulation of the Army Medical Department.

Constitution of the Army Medical Department.

There remains to be considered whether any change be necessary in the constitution of the office of the Director-General of the Army Medical Department.

The constitution of this office has, since the commencement of the revolutionary war, been subjected to frequent changes.

App. No. xviii. In 1793 a board was formed, consisting of the Physician-General, the Surgeon-General, and the Inspector of regimental infirmaries. In this board collectively was vested the general superintendence of the department, and the sole right of recommending for appointments and promotions.

But in 1798 they ceased to act as a board; and distinct duties and patronage were assigned to the members, each being made responsible solely for his own acts. The Physician-General recommended the physicians for appointments; the Surgeon-General recommended the deputy inspectors, regimental and staff surgeons, and assistant-surgeons; and the Inspector-General had the nomination of apothecaries and hospital mates.

In 1810, on the recommendation of a Parliamentary committee, the board was dissolved, and a Director-General of army hospitals appointed, with two principal inspectors of hospitals to assist him, without control in the management of the department.

Since that period, with occasional changes in the number and rank of the subordinates, the powers have been vested in the hands of one officer, sometimes under the denomination of Superintendent, but generally, as now, under that of Director-General of the Army Medical Department.

The great amount of purely professional and technical business transacted by the head of the medical department, naturally exempts the office from that control and interference on the part of superior authority to which other branches of the executive are subjected.

It therefore becomes the more necessary that the office should be so constituted as to afford the greatest security for the due and efficient performance of the duties which it has to discharge.

The past experience of boards, consisting of three or more members, each having co-ordinate authority, is not such as to warrant any great confidence in their administration. Quarrels and jealousies have paralyzed their action and impeded the public service, or else unanimity has been secured by a series of compromises in which the interests of the public have been less considered than the ease and comfort of the members of the board.

On the other hand while securing that sole responsibility which the vesting of authority in the hands of one man alone can give, care must be taken that so much business be not put upon him as to compel him to delegate a large portion of his duties to inferior and irresponsible hands, or to deprive the public service of the advantage of the suggestions which the bringing of several minds to bear on the business to be transacted or the measures to be taken is sure to elicit.

If the recommendations which we have ventured to offer be carried into effect, the duties and the responsibilities of the Director-General will be considerably augmented.

We have shown the necessity of attaching to the Army Medical Department a statistical officer, upon whom would devolve the collection and preparation of statistics, which would enable the Government and the public, by frequent, clear, and minute comparisons, to judge, not only of the state of health of the army in general, but of every station and every barrack in which the troops are quartered.

We have shown the necessity, with a view to the encouragement of medical officers in the study of their profession and the promotion of science, of carefully examining all the case books of the regimental and staff officers employed, and of selecting for publication whatever is most worthy of remark.

We have shown the necessity of appointing sanitary officers to assist in the field, of rendering it imperative on commanding officers, whether at home or abroad, in peace or war, to ask, and on medical officers to give, their advice on every sanitary point affecting the health of the troops, whether as regards food, clothing, encampments, barracks, or hospitals; and this under the varying conditions of the different climates to the effects of which soldiers are exposed.

We have shown the necessity of an immediate and complete sanitary reformation of our hospitals and barracks, both at home and abroad, and there follows, from these

recommendations, the necessity of attaching a sanitary officer to the Army Medical Department.

These offices within the department should be conducted by the ablest men that can be found.

For a man to be at once an authority in sanitary science, in statistics, in medicine, and in surgery, and to be at the same time endued with all the method, foresight, and calculation requisite to govern a great department, and direct all the measures necessary, whether by way of prevention or remedy, to secure the health of a large army, in peace and war, scattered over half the globe, would require a union of qualities which has never yet been seen in the medical, nor probably in any other profession. Nothing could be more unjust than to impose on any one individual so impossible a task. It is only by a division of labour that such duties can be performed with any chance of success.

In war especially, when to the administration of a fixed daily routine are superadded the rapid supply and the anticipation of the wants of armies in the field, the adaptation of old systems to new exigencies constantly occurring, and varying in their character according to the nature of the operations and the peculiarities of the country and climate, the resources of no one mind, however creative and fertile it may be, can be sufficient, unaided by the suggestions, advice, and judgment of others, adequately to discharge duties so multifarious.

Sir John McNeill, while urging the necessity of vesting in one person the whole power to decide, and the consequent responsibility for the course ultimately taken, forcibly pointed out the advantages of a council to the head of a department, and instanced the number of cases in which he had himself, as head of a large department, modified or changed his views, when the suggestions and criticisms of his colleagues had been brought to bear on the subject-matter of their discussion. Q. 9764. It appears to us that the object to be aimed at is, first, to secure that rapidity of decision and action, and that undivided responsibility which can only be obtained by vesting the full power and authority in the hands of one man; and secondly, to provide that the subject-matter of such decision and action shall first have been subjected in council to the examination and judgment which other intelligences can bring to bear upon it.

In support of this proposal Sir John McNeill quotes the constitution of the governments of the three presidencies in India, in each of which the public business is transacted by the Governor in council. Q. 9769.

> "The propositions are made to the council, and the members of the council are entitled to express their opinions; nay, they are enjoined to express their opinions, and minutes of those opinions are read in council, and it rests with the Governor, after he has heard and seen those opinions, to decide for himself, and he decides with the knowledge of those opinions, and in disregard of them if he considers it for the advantage of the public service."

We are of opinion that deliberative boards, composed of members having equal authority and carrying their decisions by vote of the majority, are not efficient instruments of administration.

On the other hand, we are satisfied that a single head, unaided by a division of labour for details, and by the suggestions, advice, and judgment of a council, cannot adequately discharge duties, very onerous from their amount, and requiring, from their multifarious character, a knowledge of distinct specialties with which no one man can be equally acquainted.

With these opinions, we recommend that the Director-General should have three colleagues associated with him, who should be appointed by the Secretary-of-State for War, and should be selected for their eminence in medical, sanitary, and statistical knowledge respectively. Those officers would act as the council of the Director-General, and should have the power of submitting any questions to the board, and of expressing their opinions in writing, and minutes of all proceedings should be recorded by a secretary; but the Director-General, acting upon his own responsibility, might disregard those opinions if he consider it necessary, recording his reasons for so doing. Q. 8988–96.

All matters of routine would be referred to the head of the branch to which they belong, and only such matters would be subjected to the consideration of the council as are of importance.

We find in the report of the select committee on "army and navy appointments," in 1833, and in the "Report of the Commission on Promotion in the Army," which sat in 1854, a recommendation that all staff appointments in peace, except that of Commander-in-Chief and his personal staff, be held for a period of five years, subject to re-appointment at the termination of that period if the interests of the public service should require it. We are of opinion that a similar regulation should apply to the Director-General and

council of the Army Medical Department, except that a longer period should be fixed for the tenure of the office of Director-General.

The salary of the Director-General is 1,200*l.* a year. In our opinion such a salary is quite inadequate for an officer of so much importance. The Director-General is the administrative head of a scientific profession. He cannot satisfactorily discharge the duties imposed upon him unless he possess great knowledge and attainments. He has entrusted to him the direction of a department numbering no less than 788 officers on full-pay; and he is responsible for the health of an army of 150,000 men, serving in every part of the world and in every variety of climate.

We therefore feel it our duty strongly to recommend a revision of the salary now attached to the office.

We beg to sum up the practical results of our inquiry in the following Recommendations, as regards

Barracks, &c.

We recommend that in future a minimum cubic space of not less than 600 feet be allotted to each man in his barrack-room and in the guard-room, and that an interval of at least three feet be allowed between each bed in the former.

That urine tubs be on no account tolerated in the barrack-rooms; but that urinals with a water supply outside the barrack-room, or common chamber utensils, be substituted.

That every barrack should contain ablution rooms and baths, laundry and drying-room, and workshops; and also, that suitable provision be made for non-commissioned officers' and married soldiers' quarters.

That day-rooms be constructed for the use of the men in some of the principal barracks at home, and, if found advantageous, that they be extended to all barracks.

That all barrack-rooms, guard-rooms, and day-rooms be sufficiently warmed and lighted, whatever may be the number of men occupying them; and that gas be used for lighting whenever it is obtainable.

That, with a view to enable the soldier to have variety in his meals, the means of baking, frying, &c., be provided in the kitchens of all barracks and hospitals.

That, with a view to the thorough ventilation of the barracks, the diminution of overcrowding, the abolition of cesspools, and the formation of proper drainage and sewerage, and an abundant water supply, a Commission be immediately appointed, consisting of an engineer officer, and a medical officer versed in the practical application of sanitary science, who, together with the medical officer and the barrack-master of the inspected barrack, shall systematically undertake the inspection of every barrack, and devise and execute the necessary works with such expedition as the available resources of the Government may permit, until every barrack in use shall, in its turn, have been brought to a healthy and satisfactory condition; and that in the meanwhile, immediate orders be given to the barrack department to revise the allotment of men to rooms, so as to divide the cubic space more equally, and when the barracks are not full, to occupy additional rooms, thereby reducing the numbers in each, and thus as soon as possible secure to each soldier at least the minimum space recommended by us.

That, in future, before a barrack is built, the advice and opinion of competent medical officers be taken as regards both the site and plan.

That, in order to secure that sanitary considerations shall not be overlooked in the choice of sites for encampments, hospitals, barracks, or in any matter involving the health of the troops, such as water supply, drainage, food, clothing, &c., medical officers be invariably consulted; and in order to fix on commanding officers and on medical officers the responsibility properly belonging to each, that the medical officer shall be required to give his advice in writing, the commanding officer to affix in writing his reasons for rejecting it, if he think fit to do so, and to transmit the document to superior authority.

That, in order to secure to the commanding officer of an army in the field the most efficient sanitary advice, and to relieve the principal medical officer of duties which his other avocations leave him no time to perform, a sanitary officer be appointed to act under the authority of the principal medical officer, but to be attached to the staff of the quartermaster-general.

That inquiry should be made into the French system of gymnastic exercises, with a view to the adoption of some similar practice in the British army.

That facilities and encouragement be given for all athletic games, such as fives, cricket, quoits, single-stick, for gymnastic exercises, &c., and that the men be employed on different kinds of labour when possible.

Rations, Clothing, &c.

We recommend the consolidation of the present stoppages for ration and regimental messing, and, in consideration of that consolidated stoppage, the issue to the soldier by the commissariat of a sufficient amount of food for three daily meals, including vegetables, tea, coffee, and sugar, with such variations abroad as the climate or the market may render necessary.

That the soldiers' "necessaries," hitherto obtained by regimental contract, be provided by the commissariat.

We recommend the adoption of a better boot; also a lighter stock of the pattern specified; a more horizontal peak to the forage cap; and the substitution of a light cap, with a wadded linen cover or a roll of linen, for the shako in hot climaes.

That greater attention be paid to the interior form of the head-dress, whether shako or busby; that the great coat be of a better quality and more durable texture, that all clothing be made sufficiently loose to permit the free use of the limbs and unimpeded action of the muscles, and that the material of the clothing be varied according to the climates in which the troops may be serving.

We strongly recommend the immediate testing, by its issue to half a battalion, of the "Berrington" knapsack sling.

Hospitals.

We recommend that in all cases competent medical sanitary officers should be consulted as regards the selection of site, and the original construction of hospitals to be built; and that the opinion of those most conversant with the interior economy of large civil as well as army hospitals be taken before any plans are finally approved.

That the present minimum space allowed by the regulations to each bed be increased from 600 feet at home and 800 in tropical climates to 1,200 at home and 1,500 in tropical climates; and that a minimum distance of 4 feet between the sides and 12 feet from foot to foot, and as much more as the size of the ward will allow, be maintained between the beds.

In the construction of new hospitals, we recommend the plan of separate pavilions, with lateral windows on opposite sides, and natural ventilation.

We recommend the use of Parian cement or other impervious material for the walls and ceilings of hospital wards, in lieu of bare brick or plaster.

That sufficient provision be made for warming and lighting the hospital according to the weather and season, on the requisition of the medical officer in charge of the ward.

That water-closets be built in connexion with every hospital, and an efficient sewerage effected by impervious drains not passing under the building, all cesspools in the immediate vicinity of hospitals being done away with, and that the building containing the closets and sinks be cut off from the hospital by a ventilated lobby.

That suitable lavatories, baths, and laundries be provided.

That the stair-cases and landings be in all cases constructed of stone.

That proper ranges and ovens be put up in the kitchens of every hospital, so that meat may be stewed and roasted as well as boiled, and a sufficient variety in the preparation of food may be afforded to the sick.

That the commission recommended to be appointed for the improvement of barracks be instructed to include hospitals in their operations.

That in future the vote for the building and repairs of hospitals should be separated from the vote for other military buildings, and that the estimate for the former shall pass through the office of the Director-General, and be by him presented to the Secretary of State, in accordance with the practice of the corresponding department in the naval service.

That in the case of items below a certain amount, and forming part of the annual estimate allotted for the repairs of each hospital, the purveyor be required to cause the repairs at once to be executed upon the standing contract made by the engineer without previous reference to that officer; and in the case of larger repairs which, though within the sum originally voted, require a special contract, the purveyor be empowered, under the authority of the governor or principal medical officer, as the case may be, to enter into such contract, subject to the approval of the engineer officer, both as to the terms of the contract and the sufficiency of the work executed.

That the standing contracts, in lieu of being made separately with different trades, should be made with builders who would execute the whole work through the various artificers employed by them.

That the duties of supply and account, in lieu of being divided as now between several officers and departments, be vested entirely in the purveyor, who shall provide the furniture and utensils of all kinds necessary for the use of his hospital, according to a list to be laid down in his instructions, keeping a certain reserve in store, and issuing without requisition to every patient all the articles prescribed in his instructions as necessary for the personal use of the patient.

That in all hospitals to which no governor is appointed, the purveyor be placed by his instructions distinctly under the principal medical officer of the hospital, whose orders he shall always obey; but in case of apparent extravagance either in quantity or quality, the purveyor shall report to the purveyor-in-chief, after obeying the requisition, in order that the case may be brought under the cognizance of the Director-General.

We recommend the adoption of revised diet tables with such alterations as may be thought advisable with reference to climate and other considerations, the object being to reduce the number of extras which require a requisition on the purveyor to authorize the supply.

We recommend the adoption of simplified forms of admission books, medical registers, monthly diet rolls, &c. &c.

We recommend the substitution, for the agglomerated regimental hospitals now in use, of a general hospital, with a suitable scheme of organization and government, in accordance with the preceding recommendations, at Dublin and Malta, or at such other stations as the Secretary of State may select, and that female nursing, under the limitations we have specified, be introduced into general hospitals.

We recommend that apartments be provided in military hospitals for the reception of officers for treatment at rates to be decided on by the Government.

Also, the creation of lunatic wards at the principal general hospital, as in the new lunatic hospital at Fort Pitt.

Field Hospitals.

We recommend that a fixed scale of equipments be laid down for the field hospitals for a battalion, a brigade, and a division.

That deficiencies or diminution of stock in this equipment be supplied on the requisition of the officer in charge of the battalion, brigade, and division, without counter-signature by any superior authority.

That all requisitions beyond the scale laid down should be countersigned before they can be available as vouchers to the issuer.

That hospital marquees should form part of every field medical equipment, and the bell tent never be resorted to for the treatment of the sick, except on the line of march, or on occasions when from unavoidable circumstances no better accommodation is attainable.

That a certain amount of horse and wheel transport be permanently allotted to the medical as to all other departments, and that the same rule be observed as regards sea transport, so far as the exigencies of the service will permit, with due regard to the wants of all other departments necessary to the administration of an army in the field.

That on the outbreak of war an officer of rank, chosen for his administrative powers, tact, and judgment, be appointed as governor of the general hospitals, who should be supreme on all matters of administration, and over all the departments whose co-operation is necessary within the hospitals.

That on the outbreak of hostilities immediate steps be taken to secure the necessary means of transport in properly fitted ships, with a suitable staff of attendants, for the removal to England of such patients in the general hospitals as may be equal to the voyage, and not likely to be soon fit for service in the ranks.

Inspections.

We recommend that the duties of inspectorial officers be defined by regulation, and that the regulations be printed for the information of the service.

Returns, Registers, Tables, &c.

We recommend the adoption of a form of monthly diet table, by which the necessity of re-writing every day a nominal list of every patient in the hospital will be done away with. And we recommend that all the regulations affecting the army medical service be revised, many having become inapplicable owing to the changes in the organization of the War Department, and from other causes. The sanitary directions which they contain are neither numerous nor specific enough, and pre-suppose a much

larger amount of practical sanitary knowledge than is usually possessed by most medical men, either in or out of the army. There are also no means provided whereby any recommendations, however good and appropriate, for securing the health of the troops can be brought into practical application.

Statistics.

We recommend that a nominal list of the deceased soldiers, and of births and marriages in the army, be communicated to the Registrar-General at such periods and in such a shape as may be necessary for the objects we have indicated.

That an improved nomenclature of diseases be adopted in the Army Medical Returns, and such alteration in the classification of diseases as may admit of an accurate comparison of them with other returns of a similar nature; and that provision be made for the periodical publication of the statistics of sickness and mortality among the troops.

That forms be prepared for the use of the medical officers, which shall enable the Commander of the Forces in the field to know what is the past and existing rate of sickness and mortality in his army, what are the causes of it, and for what time, at a continuance of the same rate, and with what reinforcements he can maintain his army in the field. These forms should besides enable the home authorities to compare the rates of the army with those of civil life and with its own rates at previous periods.

That the household brigade be directed to furnish to the Army Medical Board the same returns of sickness and mortality as the rest of Your Majesty's troops.

For the attainment of these objects we recommend the formation of a statistical branch in the Army Medical Department.

Invaliding.

We recommend that men claiming pension not for disability but for length of service, and men labouring under palpable disability, be no longer required to attend at Chatham.

That the attention of commanding officers be drawn to the necessity of carefully recording the causes of any injury or disease from which men may suffer, and which may ultimately affect the amount of pension awarded to them.

Education of the Army Medical Officer.

As regards the qualifications to be required of the candidates previous to examination, we recommend, that in all cases such certificate as would qualify a civilian to practise medicine as well as surgery should be exacted of the candidate, and that the examination should comprise some test of general education.

We further recommend, as regards both surgical and medical knowledge, the addition of a practical to a theoretical examination.

That this examination be competitive, and be entrusted to a body of practised examiners, as is now done by the East India Company, and we think it desirable that, if possible, one and the same board should conduct the examination for the medical service of the East India Company, the Navy, and the Army.

That after the first examination the candidates be sent to a military general hospital, there to go through a course of instruction in military hygiene, and in clinical military medicine and surgery, for which purpose the necessary professorial chairs, in lieu of the two now existing in Edinburgh and Dublin, should be instituted at the principal general hospital in England.

That during their residence at such general hospital all the probationers be accommodated with quarters, and shall receive such a rate of pay as may be sufficient for their subsistence.

That the course shall not be less than six months previous to an examination on the subjects of the course, on passing which the probationers shall be eligible for appointments as assistant-surgeons, and that, if possible, their first appointment be to a regiment.

That an examination in the practical knowledge of his profession as a military medical officer be passed by the assistant-surgeon before promotion to a surgeoncy.

That leave of absence be granted for attendance at hospitals and medical schools;

That medical officers be permitted to take private practice, under such regulations as may ensure attention to their military duties.

Pay and Retirement.

We recommend that the regulation which requires officers of the department, when promoted, to serve for one or two years on a lower rate of pay than that to which from their length of service they are entitled, be abolished.

We are of opinion that a considerable augmentation of the pay and retiring allowances, but especially of the former, is necessary to the interests of the service; but we must leave the adjustment of the details of pay of each rank to the Executive Government.

We are of opinion that the granting of a limited number of good-service pensions to the officers most distinguished by their zeal and efficiency is due to the department, and will act as a wholesome stimulus to its officers.

We consider compulsory retirement at 65 years of age for the inspectorial ranks, and 55 years of age for the executive ranks, to be absolutely necessary for the efficiency of the service.

Promotion, Roster of Service, and Relative Rank.

We recommend that the rank of first-class staff surgeon be abolished, and that regimental and staff surgeons now called second-class staff surgeons should after 20 years' service be styled surgeon-majors, with a small addition to their pay.

That the rule of seniority be strictly maintained in the promotion of assistant-surgeons to the rank of surgeons, except in case of incompetency or misconduct; and that no exception be made to this rule save for distinguished conduct, when the services for the which the officer is promoted shall be published with his name in the Gazette.

That the seniority be that in the army without reference to the station on which the officer to be promoted may be serving. That promotion to the ranks of deputy inspector and inspector-general be by selection for merit; and that, in the recommendation to the Commander-in-Chief, the Director-General shall state the position on the Army List of the officer recommended and the grounds of the selection.

That any confidential report by which the character of an officer is unfavourably affected shall be always communicated to him, and an opportunity given him of offering his explanation in defence.

We recommend the establishment of a roster of service, subject to this condition, that the amplest discretion be vested in the Director-General, to select for each station the principal medical officer whom he may think, from experience and character, likely best to discharge any peculiar duties which may attach to the medical charge of that particular station.

That the relative rank of the army medical officers be revised, and that it carry with it the same advantages as to quarters, allowances, precedence, &c. &c., as substantive rank, and that except in the case of the presidency of a court-martial, medical officers should sit on courts or on mixed boards according to their relative rank and the dates of their commissions.

That a limited number of medical officers of distinguished merit be styled honorary physicians and surgeons to Your Majesty.

That the Army Medical Department be held entitled to the same share of honours and rewards as combatant officers of the same rank.

That in the Army List the medical department should have precedence of the commissariat, and that their names should appear according to their rank, with the dates of their commissions, in the list of the regimental staff, and that the whole regimental staff be placed before the list of captains.

That a limited number of good-service pensions be granted to medical officers of distinguished service.

Lastly, that new regulations as to pay and retirements, promotion, rank, honours, and rewards, be embodied in a Royal Warrant for the regulation of the Army Medical Department.

Constitution of the Army Medical Department.

We recommend that the Director-General should have three colleagues associated with him, selected for their eminence in medical, sanitary, and statistical knowledge respectively, and to be appointed by the Secretary of State for War. Those officers would act as the council of the Director-General, and should have the power of submitting any questions to the board, and of expressing their opinions in writing. All matters of routine would be referred to the head of the branch to which they belong, and only such matters would be subjected to the consideration of the council as are of importance. Minutes of all proceedings of the Council should be recorded by the secretary, but the Director-General, acting upon his own responsibility, might disregard those opinions if he consider it necessary, recording his reasons for so doing.

We recommend that the appointments on the council of the Army Medical Department should be held for five years, subject to re-appointment at the termination of that period, if the interests of the public service should require it; and that a similar regulation should apply to the Director-General, a longer period, however, being fixed for the tenure of his office.

We feel it our duty strongly to recommend a revision of the salary now attached to the office of Director-General.

With a view to give immediate effect to these recommendations, we beg to suggest, in addition to the Commission to inspect the barracks and hospitals, as already advised, the appointment of committees to draw up a scheme for the reorganization of the office of the Director-General; to frame a draft warrant regulating promotion; to draw up a scheme for the proposed medical school; to revise the regulations; and to arrange the basis and forms on which the statistics of disease and mortality of the army are henceforth to be collected and recorded.

Conclusion.

We have now stated the result of our investigations into all the subjects into which, by the terms of Your Majesty's Commission, we were directed to inquire. We have endeavoured to ascertain the causes of the fearful amount of sickness and mortality which year by year thins the ranks of Your Majesty's army. We have thought it our duty neither to conceal nor to extenuate the magnitude of those evils. We have traced some, at least, of the causes in which they have their origin, and we have specified the measures which, if adopted, would, in our opinion, tend to their removal.

We have endeavoured by the recommendations which we have made to raise the standard of attainment among those to whom the care of the health of the army is chiefly entrusted, and to direct their attention to the study of that sanitary science, on the proper application of which the prevention of sickness and the preservation of life in armies mainly depend.

We have endeavoured to place the medical officer in the position to which the dignity of his profession and the great services he renders justly entitle him, and to ensure to his advice and opinion that weight and influence in the administration of the army which are necessary to secure the health and to maintain the efficiency of the troops.

With the same object we have endeavoured to lay down rules for the future government of our military hospitals, which may simplify their organization, shorten the processes of business, and give a more efficient check upon expenditure, while they improve the quality and secure the regularity of the supplies, and relieve the medical officers of all non-professional duty, enabling them to devote the whole of their time and skill to the treatment of the sick.

Above all, we have endeavoured to secure the adoption of the measures necessary to place the barracks and hospitals of your Majesty's army in that sanitary state which is indispensable to the health of the sound and the recovery of the sick, and to the neglect of which the fearful annual mortality in the army may, in our opinion, mainly be attributed. We have specified the precautionary measures which it will, in our opinion, be necessary to adopt, at the outbreak of war, in order to guard against the recurrence of those gigantic evils which destroyed life, and may almost be said to have destroyed armies in former wars.

We have endeavoured, by proposing the formation of a statistical branch in the Army Medical Department, to secure that accurate and minute knowledge of the sanitary state of the army in every part of Your Majesty's possessions which may enable the Government to judge of the results of the measures taken with a view to promote the health and well-being of the troops, to become speedily acquainted with the causes of the sickness which may anywhere prevail, and to take such precautions and apply such remedies as enlightened sanitary and medical opinions may suggest. We feel confident that the periodical publication of these statistics will keep alive in the public mind a warm interest in the subject, and will strengthen the hands of the minister and of the military authorities in their efforts to remove from the ordinary conditions of the soldier's life those influences which now so fatally affect the health of Your Majesty's army. We trust that no time will be lost in applying effectual remedies to evils so

pressing; and we feel confident that adequate support will be given to measures having for their object the efficiency and the well-being of that army which, whenever its services have been called for, has earned fresh claims to the gratitude of the country whose honour it maintains and whose soil it defends.

SIDNEY HERBERT.
AUG. STAFFORD.
H. K. STORKS.
A. SMITH.
T. ALEXANDER.
T. PHILLIPS.
JA. CLARK.
J. R. MARTIN.
J. SUTHERLAND.

T. GRAHAM BALFOUR,
Secretary.

In subscribing this REPORT I feel it my duty to offer the following observations :—

1st. I cannot concur in the recommendation (Report, page lxxx.) that the rank of first-class staff-surgeon be abolished, unless I may understand that a deputy inspector-general of hospitals will be substituted for each staff surgeon who would cease to be employed, if the measure recommended be carried out. Nothing, however, in the Report appears to me to warrant an expectation of the kind, but rather that such is not contemplated, as I find it stated, at page lxiv., that the scale of pay proposed by Mr. Alexander, which is lower by 16,470*l.* than that put in by me, "presupposes the abolition of the first-class staff surgeoncy," and there stops.

The duties now discharged by staff surgeons of the first class, cannot, I have reason to believe, after a close observation of nearly 43 years, be entrusted with advantage, or even safety, to the service, to medical officers who are not circumstanced as to be likely to act, in their official capacity, uninfluenced by regimental considerations or partialities, and are not departmentally superior to all regimental surgeons. General or other officers in command of stations, in advising with or consulting medical officers, find it desirable, nay, necessary, to their usefulness and efficiency that they should be unconnected with regiments, and often urge it as one among other reasons, for the appointment of administrative medical officers to stations not so supplied. If the measure proposed be enforced, considerable disadvantages will, I am satisfied, be experienced on home stations; but those will be far short of what will result on foreign ones, particularly on these where severe disease, in an epidemic form, often attacks the troops. On the latter stations, medical officers of standing, and of local experience of considerable duration, prove most useful, and confer benefits which cannot, to a certainty, be otherwise ensured; for even should some of the regimental medical officers in the commands possess the knowledge calculated to supply what is wanted, it does not follow that their advice will be obtainable at the moment it is necessary, as they move from place to place with their corps, and thus may be absent when the opinion of an experienced officer would contribute greatly to the interests of the service.

Further, the abolition of any one of the higher ranks of the medical department must, if it be effected without a full compensation, which is not proposed, affect most disadvantageously the interests of medical officers generally; and though this special circumstance may not, by itself, be considered a reason sufficient to prevent the measure being sustained, still I am bound, from my position, to claim for it the serious consideration of Government. Under existing arrangements, the proportion of medical officers of the senior ranks of the department is much below what it is in any other branch of the military service, there being in the engineers about, if not actually, 1 general or field officer with substantive rank, to every $4\frac{1}{3}$ inferior officers,—in the artillery, 1 to $5\frac{1}{2}$,*—in the commissariat 1 of the relative rank of field officer to every $6\frac{1}{2}$ of lower rank,—and in the medical department 1 of the relative rank of field officer to every 11 of inferior rank. Now, allowing this to be the case at present, what will it be in the medical department, if the rank of staff surgeons first-class be abolished? It will be 1 medical officer of the relative rank of field officer to 28 of inferior officers. It has, I have always understood, been held by supreme authorities a measure of policy, if not of justice, to allot a fair proportion of superior appointments to every public department; and I think no one will question the wisdom of the practice, as it is generally found there are, in every body of men, many of superior acquirements and talents, which they are ready to use energetically and beneficially, when they see some substantial advantages in prospective, to which they may aspire, but which they let slumber when no such incitements to activity exist. Medical men, I suspect, are in this respect constituted like other men, and therefore if what I have stated be not admitted as a reason why the recommendation should not be carried out, still I trust it will be allowed the consideration I think it should obtain, when fixing what compensation to the department should be granted, if the proposed change shall appear to be desirable and be practicable, without disadvantage to (the all-important point) the interests of the public service.

2ndly. I do not hold the opinion expressed at page lxxv., nor assent to the recommendation proffered at page lxxx., namely, "that the Director-General should have three colleagues associated with him" to act as his council, and that each of these colleagues should have the power to decide, independently of the Director-General, in regard of matters, which it is proposed shall appertain to his special branch; and that

* In computing the relative proportions I have not taken into account the officers of the engineers and artillery who have brevet rank, viz., 27 of the 131 captains of the former, and 80 of the 271 of the latter; for these I have assumed the medical department will, in the surgeon-majors it is proposed to establish, have, if not an equivalent, at least a partial compensation.

only such matters of importance as either involve changes affecting the welfare of the service, or otherwise, would be subjected to the consideration of the Council. I know, from considerable experience, that the Minister for War and the Commander-in-Chief, not to say the public, hold the Director-General responsible for all official advice or decisions which emanate from his office, and therefore I feel he should give consideration to almost every document which reaches it, as generally each requires to be judged of and decided on its own merits instead of in accordance with established regulations or practices, as is the case in matters of routine.

I fully appreciate the advantages which are to be derived from an interchange of views, and in consequence I had, as I acquainted the Commissioners, often sought, since I was appointed chief of the department, the individual and frequently the conjoint opinions of the medical officers detailed for duty in my office, and on some occasions had even gone further. The plan I have followed, and which I continue to observe, is, I am convinced, the best calculated to secure the end desired with the least interruption and insecurity to the Director-General, and risk to the public service.

3rdly. I consider that the service and the sick soldiers will suffer if a military commandant be appointed as governor to each general hospital; and further, that the *status* of the officers of the medical department, more especially the seniors, will thereby be disadvantageously affected, in fact the latter more particularly will stand lower than they do at present, a circumstance which must operate injuriously, considering that "in the military service, rank," as the Commissioners truly observe in their Report, page lxxiii., paragraph 4, "is everything; there exists no authority without it," &c. The governor of a military general hospital should, I think, be a senior medical officer who has shown himself a skilful administrator, and possessed of a thorough knowledge of all that is necessary to the well working of an establishment appropriated to the reception of sick, and should be armed with full power to order whatever he shall consider necessary, and be only responsible, except in purely military matters, to the Minister for War and the Director-General, from whom he should receive his instructions.

I do not deem it desirable to instance what I have, during the early part of my service, when commandants of hospitals were employed, known to happen; nor would it in my opinion be wise to adduce here all my reasons for holding the opinions expressed in this memorandum; still, I am ready to furnish them, should they be exacted.

A. Smith, D. G.

My dear Sir, Wilton, December 31, 1857.

I have received from our Secretary your protest against certain recommendations contained in our Report, and which, in justice to yourself, should appear in the page next after the signatures of the Commissioners. I have given directions accordingly.

You will find, by reference to Mr. Alexander's evidence, that he proposed to appoint additional deputy inspectors in lieu of first-class staff surgeons wherever inspection is really required; and in his estimate for the future pay of the Army Medical Department he allowed for a certain increase in that rank.

At the same time I must confess that I entertain the opinion that the army medical officers are over inspected at present, and that the responsibility of the executive officers, and the interest in their profession which attaches to responsibility, is thereby weakened.

As regards the proportion of medical officers ranking as field officers, we propose that all surgeons of 20 years' service shall rank as field officers, with increased pay and with the title of surgeon-major. The proportion of field officers to the inferior grades will then far exceed the proportion in the line, whom you omit to notice in your comparison with the army.

In recommending the formation of a council, who are to assist the Director-General by their advice, but to be invested with no power of voting, our object has been to fix responsibility on one man and on one only, but to secure to him, before his decision is given, the advantage which results from hearing the opinions of others, so that the matter under discussion shall have been presented to his consideration under all the aspects in which it can be viewed; at the same time business of a mere routine character will be expedited by its allotment to the heads of each department, under such regulations as shall ensure to the Director-General an acquaintance with all the current transactions of his office.

As regards the appointment of a governor to general hospitals, the majority of the Commission are, I conceive, of opinion that it is derogatory to the dignity of the medical profession, while it is a waste of the highest description of skilled labour, to impose upon

the army medical officers what are termed duties of administration, which are the duties performed in civil hospitals by a matron, a nurse, and a house steward. The medical officer has a right to have every appliance found to his hand by functionaries whose special and sole business is to provide them; and the experience of the late war has shown how necessary it is to vest in the hands of some officer full authority over all the various subordinates charged with supplying the material wants of the hospital, and upon whom should rest the sole responsibility that everything is provided which is necessary to the comfort of the sick, or which, in the opinion of the medical officers, is requisite to secure to their treatment the best chances of success. I have made these remarks, wishing to put on record my continued adherence to the recommendations, and my dissent from the objections which you have on your side very properly and very fairly stated, and to which your official position gives additional weight.

Believe me, faithfully yours,

To the Director-General of the
Army Medical Department.

(Signed) Sidney Herbert.

MINUTES OF EVIDENCE

TAKEN BEFORE

THE COMMISSION APPOINTED TO INQUIRE INTO

THE

REGULATIONS AFFECTING THE SANITARY CONDITION OF THE ARMY, &c.

Wednesday, 13th May 1857.

PRESENT :

The Right Hon. Sidney Herbert, M.P.	Sir Thomas Phillips.
A. S. Stafford, Esq., M.P.	Sir James Clark, Bart.
Sir H. K. Storks, K.C.B.	J. R. Martin, Esq., F.R.S.
Dr. Andrew Smith.	Dr. John Sutherland.
T. Alexander, Esq., C.B.	

President, the Right Hon. SIDNEY HERBERT, M.P.

Dr. Andrew Smith, examined.

1. (*President.*) You are Director-General of the Medical Department of the Army ?—I am.

2. Will you state what course is taken by young men who are desirous of entering the Army medical profession ?—Any gentleman who is desirous to obtain an appointment in the Medical Department of the Army makes known his wish either to the Commander-in-Chief or to the Director-General of the Medical Department,—generally to the latter. On the receipt of any such communication, a schedule is forwarded to the applicant, of which this is a copy (*the same being handed in, see App. No.* I.), by the Director-General, together with directions to enter in it a statement of his professional education, acquirements, testimonials, &c., and then return it to the Office of the Army Medical Department. On its return, the document is duly examined, and if it is ascertained that the candidate has had the education required, and is in possession of a diploma in surgery, either of the Royal College of Surgeons of England, Dublin, or Edinburgh, or of the Faculty of Physicians and Surgeons of Glasgow, or of Trinity College, Dublin ; and, further, that some person of standing in society, not of his own family, certifies or is prepared to certify to his respectability, and moreover to his being of steady and regular habits, then his name is recorded as a candidate, and he is informed that his wish will be considered as opportunities arise. If on the contrary the returned schedule does not show him to have the required qualification, he is told so ; his deficiencies are specified, and he is informed that in the event of his afterwards attaining what he wants he may report to that effect should he still desire to obtain an appointment. The applicants who possess the highest qualifications are of course considered the most eligible when vacancies arise ; therefore when an appointment is to be conferred, the candidate who is considered likely to render the best service is informed that he must proceed to London for examination, and must observe the instructions contained in the printed schedule. If the examination of the documents, certificates, &c. which he is required to produce prove satisfactory, he is then subjected to a professional examination by a Board composed of myself and two senior officers, and if the replies given to questions put verbally and in writing prove him to be well qualified to discharge the duties which are required of an Army medical officer, he is then selected for temporary service in the General Hospital at Chatham. In this hospital his capabilities are further tested by placing him in charge of sick, under the superintendence and direction of a superior medical officer ; and while he is at Chatham he is from time to time reported upon by the principal medical officer of the establishment, and the staff surgeon of the division in which he serves ; and if these reports are in his favour, he is, when senior there, recommended to fill any vacancy which may occur, and in course of time is gazetted to a commission in the Service. During this probationary period he is required to show his knowledge of disease and its treatment, his efficiency as an operator on the dead body, his aptitude for describing disease, as ascertained through the medium of periodical reports on the cases he may have treated ; and, in addition to that, he is required to become acquainted with the regulations of the Service, the compiling of returns, more especially of those which are required from regimental medical officers. I may state that there are other things which I had nearly overlooked,—for instance, he is also required to make post-mortem examinations. Each candidate at Chatham takes it in turn to make them. All the medical officers of the establishment must be there at the time ; perhaps twenty are assembled in the dead-house, and the one who has to make the post-mortem examination is required to proceed, while the one who is to make the next post-mortem examination stands by to record what the operator observes ; he then describes the state of the body with regard to the emaciation and the general appearances, all which are recorded by the gentleman standing next to him ; he then proceeds with the examination, first opening one cavity and then another, and describing everything that he sees in the cavity,—all which is recorded by the gentleman standing near him. I should also state that the gentleman who is appointed specially to superintend the pathological branch of the establishment is also standing by looking on and watching how he describes, in order to see that he reports correctly. If he does not describe the appearances correctly, he is immediately stopped by this gentleman who is standing by, and his attention is called to the points which he may either have overlooked or have improperly stated, and he is made to

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go over the parts again until he states them correctly; besides that, candidates are instructed in the application of splints. There is a stuffed figure, about as large as a man, or half as large again, and on this figure he has to apply all kinds of splints that may be necessary to apply to the living body,—he has also to apply bandages and various contrivances of that description, in fact to do everything that can be done on a figure of that kind, in order that he shall become proficient and understand exactly how to act in case he has to apply the same upon the living body. These are the principal instructions which he receives while at Chatham as a candidate; and upon his efficiency in doing all these things depends his appointment, inasmuch as I am made aware of the efficiency of every man by the reports to which I have referred from the principal medical officer.

3. Do you ever reject these candidates after the course at Chatham?—Yes.

4. In what proportion?—Not in any great proportion, because they have been pretty well tested before they go there, and it very rarely turns out that they are inefficient. While I was at Chatham, there were three rejected; but that was not on account of deficiency of professional knowledge, but it was in consequence of irregular conduct. I do not recollect any one who was so deficient in professional skill as to render it justifiable to reject him. For many years the candidates awaiting, at Chatham, commissions were required to support themselves, without any pecuniary assistance from the Government; but whilst I was there, as principal medical officer, I so frequently represented the hardship of the practice, and showed that, generally speaking, a great part of the professional duty was discharged by unpaid persons, that, in the end, the Government consented to allow the three seniors to receive six shillings per day, and the allowances of an assistant-surgeon. By this concession, a grievance, which had been deeply felt both by the candidates and myself, was partially removed, and even those who were not receiving pay ceased to complain, feeling that they in their turn would reach within three of the top. In future it will be necessary to revert to the course described, unless some further alteration be effected. During the war it has not been so; they were never kept there a sufficient length of time; they were gazetted from the day they went to Chatham, which was an exception to the rule. When the examinations were as described, a standard was established, and all candidates who did not come up to it were rejected; the rejections were from two to three annually, and were generally in consequence of defective information in regard of Latin, or of subjects on which some of the Colleges do not, or at least did not then examine. During that time (up to the commencement of the late war) every possible effort was made to secure eligible candidates, and many of the public schools were entrusted with the power of recommending one or two yearly for commissions, provided they did so after having subjected those who desired them to a competitive examination. This plan was carried on with considerable vigour, and with advantage to the public service, by the College of Surgeons of Edinburgh, but not to the same extent by any of the other professional bodies, and through the intervention of the former College some of our very best recruits were obtained. I extended it myself considerably when I came to be the head of the department, and I offered further opportunities to these public bodies to send the names of men who might compete and were considered highly qualified. Since the termination of the war, a competitive examination has been introduced as the rule of the service, and no commissions since have been granted but to men who have been selected after such a test. At first the plan appeared to answer, but now there is reason to fear it will not be possible to continue it, as a sufficiency of candidates do not offer to admit of the vacancies being filled by gentlemen whose qualifications are above the average. It is much to be desired that the plan be continued, and I think it will be practicable if the pay and advantages of those who take service be increased; if it be not, the army will in future be under the medical charge of inferiorly qualified men, as all the superiorly educated and talented will seek employment either in the East India Company's service or in private life, where their capabilities will ensure for them a remuneration much beyond what is offered to army medical officers. The time, therefore, has arrived when the Government and the country must either pay more liberally or trust their troops to the medical charge of practitioners of inferior abilities and acquirements.

5. Is that course invariable at Chatham, which you mentioned, of instruction being given pathologically, that is, on the examination of the dead body in the presence of so many persons?—Invariable; at least it was so during the three or four years that I was principal medical officer. I saw it take place. I have heard that individuals have said it was not so. Whether it is so on all occasions now I cannot answer but I know that there is a strong regulation to that effect; and if it is not practised it is the fault of the principal medical officer, who will be answerable for a breach of the regulations if he does not enforce them.

6. In the evidence of Mr. Agnis, Assistant Surgeon in the 3rd Light Dragoons, before a Committee of the House of Commons last year, he says, at page 213:—"Will you state what length of time you remained at "Chatham?"—"I was at Chatham only six weeks." "What supervision was there at Chatham?"—"There was the supervision of the principal medical "officer, who had charge of the whole of the arrangements of the hospital. The hospital was divided "into a medical and a surgical division; each of those "was in charge of a staff surgeon of the first class, "assisted by a staff surgeon of the second class; then "in charge of each assistant was a medical candidate "of similar standing to myself, who prescribed for "the patients, subject to the veto of the staff surgeon "of the first class in charge; he applied the dressings "and bandages, and did all small operations of that "sort; the staff surgeon visited the wards every day, "and approved of or corrected the treatment of the "medical candidate as he thought fit." "What was "your examination on entering the army medical "department?"—"A general one,—rudimentary,—"similar to that to which I had previously been "subjected at the College of Surgeons and at "Apothecaries Hall in some particulars." "In what "particulars did it vary?"—"I was asked one or two "questions concerning tropical diseases, such as "tropical fever and dysentery." "Was it entirely "*vivâ voce?*"—"It was not *vivâ voce* at all, it was "on paper." "Had you any drugs shown to you for "examination?"—"None." "Had you any subject "shown to you for dissection?"—"None whatever." "What was the amount of your required attendance "in the hospital at Chatham?"—"Every candidate "had to attend the hospital at 9 o'clock, and he must "remain in his ward from 9 till 11,—from 11 till 1 "he must still remain within the hospital walls, but "not necessarily in the ward under his care; he "again visited the patients some time in the evening "between 7 and 9." "Was that all?"—"That was "all his professional duty." "What supervision was "there over you, except in hospital hours?"—"I am "not aware of any." "There was none?"—"As far "as I know, none." "Were you required to attend any "lectures at Chatham?"—"None at all, there were "no lectures to attend." Is this a correct description of the practice?—That would refer rather to the examination in London; but I must also observe that the appointment of Mr. Agnis took place during the war, when it was impossible to adhere to the letter of regulations. The course of proceeding I have described is that followed under ordinary circumstances; but war is an exceptional case, and the demand for medical officers was so great and required to be so immediately met, that it was quite impossible to

adhere to routine. I shall put in a detailed statement by an officer of the department of the system followed at Chatham.

7. There is a written regulation to that effect, that they are to go through this course at Chatham?—Yes. I will put in the regulations.

8. (*Mr. Martin.*) It is a matter of order in the service?—Yes; it is an established regulation, and if the principal medical officer does not enforce it he is amenable.

9. It is a matter more of practice than of regulation?—It is the practice.

10. In your preliminary examination do you inquire into the acquaintance of the young candidates with sanitary science?—Occasionally questions are put, such as with regard to the outbreak of disease in a barrack, what steps would he pursue, &c.

11. Is such acquirement imperative or permissive?—I cannot say exactly, but I dare say that scarcely any examination takes place that some questions are not asked in regard of sanitary science.

12. Is it not his first duty to be informed in sanitary science?—It is certainly a most important part of his duty.

13. But is not the cure of disease held, in the profession, to be subordinate to the prevention of disease?—It is most important certainly to prevent disease.

14. Is the young medical officer trained for the sanitary duties of the service, previously to taking charge of a corps or a detachment abroad or at home, instructed in sanitary science?—I cannot tell exactly whether he is trained and instructed in sanitary science or not before he enters, but he is trained in all matters connected with the discharge of the duties of his profession, and goes to Chatham for that purpose. He learns, for instance, that free ventilation is necessary, and what is the best kind of ventilation to adopt; he also learns the necessity for separating infectious diseases from non-infectious diseases; he also sees and hears what is the best way of doing that.

15. Is that left to the schools in civil life, or are there any measures taken under your directions for his special sanitary instruction in any hospital?—There is no special teaching of that kind.

16. But nowhere, I apprehend, is that made a matter of special regulation under any particular officer?—No; it is no more a matter of special regulation in the medical department of the army than it is in the East India Company's service or in the navy.

17. (*President.*) You spoke of the pathological instructor at Chatham, in whose presence these operations are performed. Is he a permanent officer?—We have no officer that we call a permanent professional officer, except it be the head of the department. All other officers of the department of every rank are sooner or later liable to be moved; for instance, the present curator, who is now at Chatham, was there for about eight years, when he got dissatisfied, as most other men do, for it is a very dirty disagreeable duty, and when a man finds that great advantages do not result he gets tired of his position; this gentleman got tired of it, and obtained a surgeoncy in a regiment, and went to India; after he returned to this country, some time ago being desirous of getting on to the Staff again, he was appointed to it, and has been restored to Chatham.

18. There is certain instruction given at Chatham, whether in sanitary matters or otherwise, up to a certain extent. Is that instruction given by whatever officer happens to be there by the chance of rotation, or is it an officer selected for his competency for that particular duty?—He is an officer selected for his competency.

19. And does he remain there a sufficient time?—Yes; Dr. Williamson remained there for eight years,—he was one of the most competent anatomists and best operators that I know of anywhere.

20. What do you call him in his office?—He is called the Curator of the Museum.

21. Are the post-mortem examinations put upon record?—They are recorded, as I have stated, by the gentleman whose turn it is to make the next post-mortem examination.

22. What use is made of these records afterwards?—They are kept in a book; every post-mortem examination is recorded in that register.

23. If there should be anything remarkable or important in a scientific or medical point of view, are the facts published?—A catalogue is published with descriptions of all the preparations in the museum, and in what respects they are particular or remarkable.

24. (*Mr. Stafford.*) But you do not publish the details?—No; they are not published as a matter of course; but they may be published if an individual wishes to publish a paper on a certain subject and he avails himself of what the Necrological Register supplies.

25. (*President.*) You take, do you not, diplomas from the College of Surgeons in London, and from Edinburgh and Dublin?—Yes.

26. Do the diplomas of the College of Surgeons in each of those three places mean the same thing?—No.

27. In Edinburgh and in Dublin the diploma covers more, does it not, than the London diploma?—Yes.

28. It includes in those places what the London diploma does not?—In Edinburgh I believe it includes much more; I do not know exactly what it does in Dublin. The Edinburgh one includes materia medica, chemistry, and the practice of physic.

29. When you take the diploma of the London College of Surgeons, do you exact something equivalent to the diploma of the knowledge of materia medica and chemistry?—Yes; we examine in materia medica and chemistry. In many instances where candidates were rejected it was upon points on which they are not questioned by the colleges; for instance, on materia medica, or chemistry, or Latin. I think that we have rejected more men on account of their almost total ignorance of Latin than on account of any other deficiency. No colleges examine in Latin except for degrees.

30. Do you supply to the army medical department that which is wanting in the London College of Surgeons diploma?—Yes; we examine on chemistry, materia medica, pharmacy, midwifery, and Latin.

31. Is there a different examination for a young man who comes with a London diploma from that which another would undergo who came with a Dublin or Edinburgh diploma?—No; we give them the same. We go through the whole; we do not take anything for granted from any college.

32. Are there written questions as well as *vivâ voce*?—Yes, there are both.

33. (*Sir Thomas Phillips.*) Are the questions printed?—Yes, they are now.

34. You can probably lay them on the table?—Yes.

35. (*President.*) When do you print them?—I print them two days before an examination.

36. (*Sir James Clark.*) Have you any practical examinations?—Yes, at Chatham. Here there are no means for it.

37. Is it not very desirable that young men should be examined practically before they enter the service?—They are for three months at Chatham, on probation.

38. I think you stated that they were not there invariably for three months?—I said that during the time of the war they were not there two days sometimes; but that prior to that they were often there for three months.

39. (*Mr. Martin.*) Is the young medical officer taught to examine recruits?—Yes.

40. And to determine their relative fitness for the several arms of the service, such as Infantry, Cavalry, and Artillery?—Yes.

41. Does he receive instructions respecting their accoutrements, clothing, &c., as applicable to the various climates in which he may serve?—There is an established dress. He is taught what is the dress for a warm climate and what is the dress for a cold climate.

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42. Is he instructed as to the diet which is best suited to the several climates in which the soldier serves?—I should, perhaps, say too much if I said yes to this question. In the course of service, the attention of the young officer is directed to all these points, and he is told that when they go to a warm climate such and such food is prejudicial, and such and such food is advantageous, and so on, but I cannot say that there is any special course of instruction.

43. Is he instructed at Chatham?—No, I do not think that he is.

44. Does he receive instruction with regard to the construction and arrangement of barracks and hospitals, or as to the details of hospital expenditure?—With regard to the latter part of the question, he is; but as to the construction of hospitals, that is never left to the doctors.

45. But as regards the sanitary condition of the occupants of hospitals, does he receive any instruction?—Yes; he knows that a certain number of cubic feet is desirable, that there should be a certain number of windows in a room, and so on; but as to the construction of barracks or hospitals he receives no instructions.

46. (*President.*) Are there any recorded regulations as to the number of cubic feet which it is necessary to allow for each patient?—There are in the barrack regulations.

47. (*Mr. Martin.*) Does there exist, for the use of the young medical officers, any manual of sanitary science?—None.

48. Does it occur to you that such a work would prove of great utility to young medical officers?—Decidedly; and with reference to that question I may say that I have long had the intention, but my official duties have not given me time to do it, to get up a manual for the medical officers of the army in general, a medical guide for military medical officers, arranged under different heads, each subject being treated under its own head; such a work as that ought to exist.

49. (*President.*) There is the work of Sir George Ballingall?—Yes; that is what he calls military surgery.

50. The hospital regulations, I suppose, were never submitted to medical officers for revision on sanitary points?—No.

51. (*Mr. Martin.*) If a medical officer be deficient or altogether wanting in hygienic knowledge, as to his duties in the army, can he in after life acquire such knowledge, except at the cost of the soldier's life and health?—Yes, I think he can, because as long as he is an assistant-surgeon he is not responsible for a garrison, or for the healthiness of a garrison,—he learns while in that garrison what is necessary.

52. But on active service may it not happen that a very young man, with a very deficient knowledge, may have an independent charge in consequence of casualties amongst his superiors, and may not then his want of knowledge in sanitary science prove very injurious to those who are under his charge?—That would rarely happen; and if he were totally devoid of sanitary knowledge it certainly would prove injurious. I am almost prepared to say, with regard to the majority of our assistant-surgeons, that if they were brought here and asked about sanitary science, they would give very good answers to the questions; and I think that, generally speaking, the whole of the Army Medical Department are perfectly aware of what is necessary in a sanitary point of view. I only fear that they can do little in that respect; power does not rest with them.

53. But they can always make suggestions?—Yes; but a person gets tired of suggesting, especially when he finds that his suggestions meet with no consideration.

54. (*President.*) Do you recollect a letter that was written in November 1854, by Dr. Menzies, from Scutari?—I do not know what letter you refer to.

55. I refer to his report sent home as to the state of the hospital, in which there was nothing very unfavourable to report, and yet the sanitary state of the hospital was very bad?—Yes.

56. If that report had come home, and had spoken strongly of great deficiencies of space and bad drainage, and want of ventilation, and great sanitary defects generally, some steps would have been taken from home, probably, to remedy them?—If a strong report had been sent home, and one had not been led to believe that there were local authorities on the spot to remedy those defects, I should have applied to the Minister for War, but as no report of that kind came I did not do so. The first report was from Dr. Burrell, and the tenor of that report was that everything was in good condition, save and except the drains and the privies, and that they were negotiating for the purpose of doing something in respect of them.

57. Do not you think that these good reports, coming from two separate officers, showed that their attention had not been in their previous practice sufficiently turned to questions of sanitary prevention?—No. With reference to Dr. Menzies, he was over-pressed with work, and hardly knew what to do first, and consequently we must expect that some matters would be overlooked.

58. They were not overlooked, but he gives an acquiescing kind of opinion, and speaks of the state of the hospital as not being so very bad, but alludes to one or two small things that ought to be remedied?—He reported the chief defects, which were the drains and privies.

59. It appears to me that there is a want of theoretical sanitary instruction, which ought to be given to the young men before they enter upon their practical duties?—I think before you could fairly come to this conclusion, it would be necessary to ask more officers with regard to sanitary measures what they consider to be necessary, and if Dr. Menzies was brought before this Commission and questioned, I daresay he would tell all that is necessary to be done, and even what was necessary at that time.

60. You are anxious, no doubt, in every way to improve the status and qualifications of the young men in your department, would it not be a great advantage if there were opportunities given for sanitary study to a very young man at the commencement of his career?—Decidedly, and it is what I should recommend, because it is better that they should at once acquire that knowledge, than have to acquire it afterwards.

61. (*Dr. Sutherland.*) I understand from you that there is no special examination on sanitary matters?—Not entirely on sanitary matters. There is none separate from the general examination, but the general examination embraces, I do not say always, but I believe generally, questions on sanitary points.

62. (*Sir Thomas Phillips.*) I see that there is no department, if I may use the term, for sanitary subjects?—No.

63. (*President.*) It is included in the course given by Mr. Tufnell in Dublin, and the late Sir George Ballingall at Edinburgh, is it not?—Yes.

64. You have no professor giving similar courses in London?—None.

65. There are two classes of candidates who come to you, one who have and another who have not gone through a course of military hygiene, including sanitary instruction?—Yes.

66. And you give a different examination to them, do you not?—No; we do not make any difference as to Dublin or Edinburgh in that respect; we put questions to all. I may remark that we have no proof that a young man has attended the course of Dr. Tufnell, or at least attended it regularly, therefore we ascertain from him whether he possesses the knowledge or not.

67. (*Sir James Clark.*) Is it your opinion that military surgery or military hygiene could be better taught after a candidate has entered the service or before, or whether professors of military surgery at the schools would be useful?—I think we ought to have a school at the chief general hospital of the kingdom, where there ought to be always a number of candidates studying their medical duties, as connected with

the army, in order to fill vacancies as they arise; as one is removed his place should be immediately supplied by another.

68. For what period of time would you have the probationers remain?—For twelve months; and I may mention what I believe is in contemplation, as Lord Panmure has agreed to have a number stationed at Netley. I have given in a plan in which I have shown the quarters for medical officers, and I have estimated for forty juniors.

69. (*President.*) Do you contemplate doing away with the external military professors at Edinburgh and Dublin?—I never considered that. That is a political question. As long as I have a school at Netley I do not care what is taught elsewhere.

70. How is it a political question?—I say political, because I believe it has been pressed on the Government by Members of Parliament who have represented Dublin and Edinburgh.

71. (*Sir James Clark.*) Setting aside the political question, what is your opinion upon the subject?—I would say that we do not want them.

72. You think that diverting a young man from the regular progress of medical study to go into that which he has to learn afterwards is a loss of time?—Yes; I should say that there is no necessity for those two chairs.

73. You would have first-rate men down at Netley to give instruction on military surgery?—Yes, and on the best means of maintaining the health of armies in the climates of the different countries where troops are to serve, and the special diseases of such countries, &c.

74. (*President.*) You contemplate moving the whole thing bodily?—Yes; having models of all kinds of waggons that have been used or are used, and every kind of appliance used to carry sick and wounded men. There is to be a large establishment containing a model of every kind of invention.

75. You contemplate establishing at Netley not only a large general hospital, but a medical school for candidates?—Yes.

76. (*Mr. Alexander.*) Will you have models of barracks and hospitals?—Yes, as far as it may be practicable.

77. (*Sir James Clark.*) Do not you think it would be necessary that there should be practical examinations before going into the hospital at Netley. I presume you are aware that in the East India Company's service no one is admitted without undergoing a practical examination?—No, he would be submitted to that at Netley before being recorded as an eligible candidate for a commission.

78. Do you not think that without something like that the character of the medical officers of the army will sink in the estimation of the public?—I do not think so. If we can get men who can answer the questions that we put to them, and further, pass the ordeal to which they will be subjected at Netley, I do not think we need fear.

79. You say that you are the examiner, and two other medical officers?—I and three, now.

80. You have a doubt, have you not, with regard to the competitive examination being continued?—Yes, I do not see any chance of being able to continue it. I want twenty-seven men now, and I cannot get that number to come forward.

81. Have you not as many candidates as there are vacancies?—No.

82. You maintain an absolute standard in your competitive examination?—Yes; but I do not want to return to the standard if I can help it. I wish to keep up the competitive examination; though I fear it will not be practicable, as eight candidates have withdrawn since the questions put at a late examination were published.

83. Why?—I suppose they thought they were too severe.

84. (*President.*) They could not be too severe if they knew what they were?—But they did not. I do not put forward the questions that are to be asked at forthcoming examinations.

85. (*Sir James Clark.*) In competitive examinations, do you not consider it essential that the examiners should be capable of examining candidates in the latest improvements and discoveries in medical science—that only men occupied in teaching one progressive science, physiology, pathology, &c., are fully competent to examine our more advanced medical candidates?—I am much disposed to think that the officers who examine in my office are qualified to ascertain all that is necessary, considering each candidate examined is possessed of a diploma, as stated. The time which is required, when the examinations are competitive, cannot be spared; therefore, if such are to be continued, it will be my duty to represent to Lord Panmure the necessity for employing other officers. The last examination occupied myself and three other officers for nearly six days.

86. (*Mr. Martin.*) Such being the case, do you not think that special examiners, men of approved science in medical life and teachers in great institutions, would be the more fit examiners?—It might be desirable to have such examiners, but I cannot admit it to be necessary on account of the incapacity of the army medical officers.

87. (*President.*) Upon the same principle as prevails in the civil departments now, where I believe they employ a foreign body of examiners so that there shall be no suspicion of favour or partiality in the department itself?—Yes.

88. (*Sir James Clark.*) Is there any second examination for promotion in the army?—There is a rule to that effect, which has been long in abeyance, as the practice created much dissatisfaction in the department generally, but more especially amongst those who were reported highly qualified, and who, notwithstanding, did not obtain the promotion they expected.

89. Should it not be the general rule that there should be a second examination?—If such a rule were again to be enforced, I expect the same feeling would result. For years past the annual reports of medical officers have been considered as, in some degree, calculated to supply what it was attempted to obtain by periodical examinations. If promotion were to be given by selection, these reports would, if the office establishment was sufficient to admit of their being fully examined, afford great assistance towards forming a correct estimate of the capacity and acquirements of medical officers.

90. You are aware, are you not, that in the navy there is an examination for assistant-surgeons before they are promoted to be surgeons, and that they are obliged to come home and attend to practical anatomy before that examination?—I am not.

91. Do you see any objection to a Government board of civilians for examination of medical candidates for both the navy and the army at the first entry. After that examination each would go to his respective service, and if a second examination were required then it would be for the medical officers of each department to examine them, and they would have to examine them on the duties they would have to perform in their respective departments in the army or in the navy?—If I were to answer with a view to my own comfort, I should reply no; but, as I feel it my duty to have regard to the interests of the service, I am compelled to say I would wish to see candidates undergo some examination by army medical officers, and, if possible, in presence of the Director-General. I have no objection to an intermediate examination being held by a board of civilians.

92. If the chief officer or anyone appointed by him was present at the examinations, would that be satisfactory, or will you state whether there would be any objection to it?—I would rather that the chief officer

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should be present at the examination by the board of army medical officers, whether that might be in London or at the chief general hospital of the kingdom. I think this examination to be necessary to prevent its being supposed that the senior officers of the department are incompetent to test the qualifications of those who desire to serve in the army.

93. (*President.*) That would not be the case if you apply the same rule both to the navy and to the East India Company, as it would be forming one board for the purpose of examination?—I fear it would be the case, both as regards the army and navy. In the case of the East India Company it would not be so, as there are no Company's officers in England available to form a board; further, I think the head of the department would lose a favourable opportunity of acquiring some important information in regard of individual character.

94. But that he might still do, might he not?—Not unless he sat with the Board of Civil Examiners.

95. Do you see any objection to it on this ground; if the examination must be still confined to civil surgery and medicine, it would exclude the subjects which you now include in your examination, and which are peculiar to the military service?—No; if the Board of Civil Examiners could make it convenient to sit on days and at hours when he could attend.

96. (*Sir James Clark.*) It would be a body placed between our numerous institutions and the public service, and their examinations would tend to raise the character of the colleges?—I do not know what effect it would have on the colleges; nor am I prepared to venture an opinion as to how far it would benefit the army medical department.

97. Suppose you found him to be ignorant, not knowing how to feel a pulse or to bleed a man?—Of course he must learn or be rejected.

98. Then why not ensure that he learns that beforehand?—We do. He has a period of probation at Chatham; and should he, while there, be found incompetent, he is not commissioned.

99. But your knowledge comes too late, does it not?—No; because the candidate is not appointed.

100. (*Mr. Martin.*) Returning to the question of the preliminary examination, do not you apprehend that the circumstance of there being eminent teachers in the profession in civil life, is owing to the immense competition which exists, and that such men are more competent to conduct such an examination than the average body of medical officers in the army or the navy?—They must doubtless be more competent to test the extent of scholastic knowledge possessed by candidates. The examinations conducted in my office have had more reference to practical points which will be seen by reference to the series of questions which now lie on the table, and which constituted part of those which were put to the gentlemen we last examined.

101. There is no wish, I can assure you, to underrate the men in your office, but an examination of that kind is not equal to a board who methodically set to work.—Our board works methodically, at least to a certain extent, and what is not completed by us is accomplished at Chatham; if we had no place to practically test candidates, that certainly would require to be done in London.

102. (*Sir Thomas Phillips*). Suppose you had that which I understand you contemplate, a good set of professional medical teachers at Netley, would they hereafter supply you with the means of forming a board, jointly with any other authorities who might be selected, very competent for the preliminary examination?—Certainly.

103. Would it not be desirable in your judgment in that case, to use them for that purpose?—Yes.

104. (*Mr. Martin.*) Do not you apprehend generally that both the theory and the practice of medicine and surgery and the cognate sciences, are kept up at a higher pitch in civil life than in the public services, owing to the active and excessive competition, and the opportunities which exist for improvement? Is not that fact generally admitted amongst ourselves?—To a considerable extent it is so, and I feel it will be so until we improve the position and increase the pay of the army medical officers, and make them feel that the treatment they experience requires exertions on their part, which I suspect they do not feel disposed to make under present circumstances.

105. You would encourage them by pay and promotion?—Yes.

106. (*Sir Thomas Phillips.*) Is the present Board of Examiners constituted by any minute?—No; at least I know of none; it has always been the practice for the Director-General and two senior officers to constitute the examining board; since the plan of competitive examinations has been adopted it has been the Director-General and three senior officers.

107. Are they always persons filling the same positions, or are they persons selected by the Director-General?—The Director-General and his professional assistant are always two, and the next in seniority in the office, if competent.

108. I understood you to say, with regard to the character of the instruction now provided at Chatham, that it is limited simply to the Curator of the Museum? The Curator is the officer chiefly employed, but a senior officer is required to be also present at all post-mortem examinations, and operations on the dead body.

109. By senior officer, do you mean a surgeon of a given class?—Yes, a staff surgeon of the first class, or, perhaps, the principal medical officer, who is of a higher grade; when I held the latter position I took pleasure in observing how the young gentlemen generally performed the operations.

110. What extent of practice had the students there? What number of patients are there there ordinarily?—Each had usually from twenty to twenty-five patients; at times more at times rather less.

111. What was the extent of the hospital? what number of patients upon the whole were there?—The number of patients varied, during the summer they amounted sometimes to between four and five hundred, during the winter again they at times did not exceed two hundred and twenty or forty.

112. (*Sir James Clark.*) Is it in your opinion possible to adopt any plan for the purpose of ensuring that medical officers in the army should keep up their knowledge of their profession and the progress of medical science?—I see no plan that could be extensively employed beyond what now exists very generally. At all the principal foreign stations there is a medical library supported by the officers serving in the command, and the contributions to it permit of a considerable number of the best works being purchased as they are published; the books are circulated. A moderate contribution from the public purse would greatly extend the advantages which these institutions now afford, and might also be made available to maintain a small museum in which preparations, especially vascular ones, often necessary for reference, might be at hand when wanted.

113. Might not an officer after serving abroad for some years come home and be a few months at this large hospital?—To a certain extent such is the case now, there is generally one junior officer, sometimes more, required to proceed home yearly from each colony, and the longest in the colony is always selected; he continues to serve at home till he becomes the longest at home, when he again has to go abroad. On his arrival in this country the longest then at home, unless for special reasons, proceeds to replace him.

114. (*Mr. Martin.*) Is that now a matter of order or of accident?—Of order, as will be seen by my last reply; I think it would be a great advantage if officers returning home could have a period of leave allowed to study.

115. They are allowed a certain period of leave for that course of improvement?—They have no period of leave for that.

116. (*Mr. Stafford.*) Is there a roster for colonial service?—Yes, for foreign service for staff surgeons and assistant-surgeons.

117. Is that published?—No; no roster is ever published of the men who are liable to go on foreign service.

118. (*Mr. Martin.*) Would it not be desirable that medical officers coming home from any of our foreign possessions, after having served a certain number of years there or coming home on sick leave, should have a period for study allotted to them by roster on arrival in England, the one immediately on his return, and the other on regaining his health?—Yes, for study.

119. Should it not be made a matter of order?—It might be established as a regulation, but it would be necessary in the event of that being done to increase the establishment of medical officers considerably beyond what it is at present.

120. (*President.*) You do not care whether the two Professorships at Dublin and Edinburgh are kept up or not?—I do not, assuming that we shall have a school at Netley Hospital, or wherever the general hospital may be.

121. In point of fact, you think that the course in Dublin or Edinburgh is necessarily very short in military surgery?—It extends only over three months, I believe.

122. The knowledge gained is superficial, is it not, to a certain degree, compared with what you could give in the hospital at Netley?—Yes, limited as compared with what would be given at Netley.

123. You would prefer, if you had your option, that a knowledge of the specialties of military hygiene should be acquired after examination in the large hospital rather than beforehand in Dublin or Edinburgh?—I should prefer their being acquired at the general hospital, and be communicated by officers specially appointed for the purpose.

124. You do not object upon general grounds to the formation of an independent general body of examiners who should institute practical examinations, not only for the army, but if possible for the navy, and possibly for the East India Company?—I do not, still I should desire an examination also by army medical officers.

125. Except that you thought it might convey the appearance of a slur upon the department, you do not see any other objection?—I see only what I have already stated.

126. The slur upon the department after all would not be a real one if the same rule were applied both to the Navy and to the East India Company's service?—Not merited, still it might be regarded one; not so likely, however, if the navy were to be included.

127. On public grounds you see no objection?—None; as what is to be gained by a departmental examination, could still, if thought necessary, be acquired.

128. It would have this advantage, would it not, that it would follow the same rule which is adopted in the civil departments, and which is, generally speaking, a competitive examination, employing foreign examiners rather than their own people?—Yes, and it might if resorted to render unnecessary the competitive examination we now make, and if so, it would not be necessary for me to apply for sanction to employ persons not in my office as examiners.

129. (*Mr. Stafford.*) Do you mean military men or civilians?—Military men.

130. You contemplate, do you not, the removal of the whole establishment at Chatham, the scientific portion of it and the museum, to the new hospital at Netley?—Yes.

131. Netley would completely take the place of Chatham for all the purposes of instruction to probationers?—Yes.

132. Will you have the same advantages there? For instance, shall you be able to have the invalided there?—Yes; that is to say, if invalid barracks be erected.

133. What number of patients is the hospital built to accommodate?—1,200.

134. That is a very much larger number than the hospital holds at Chatham, is it not?—Yes.

135. Do you contemplate strengthening your hospital in the way of patients by having recourse to any other garrisons?—No. I fear sending sick from any considerable distance, as the chance of recovery is lessened, especially in cases of acute disease, by such a proceeding.

136. You would wish to trust entirely to the cases of invalids who were discharged?—I have no objections, but the reverse, to see more there, if others could be removed thither without danger.

137. Then you will lose entirely that number of patients which you have at Chatham, that being a large garrison?—Yes.

138. Then you will have a much smaller field for the exercise of medical skill than you have now at Chatham?—Yes.

139. (*Sir James Clark.*) You alluded just now to acute cases. Are there not many chronic cases which might be sent from the camp to the hospital?—There might be a few, from time to time, but there are not generally in regimental hospitals many chronic cases, as most of this description are, if not likely to recover soon, sent away as invalids at the half-yearly inspections.

140. By an invalid barrack you mean a barrack in which men are to be placed who are brought home for discharge?—Yes, proposed for discharge.

141. From the various colonies?—Yes, and also from stations at home.

142. (*President.*) If the building would contain 1,200 men, and you had only half that number, you would have a barrack close at hand, would you not?—I should be sorry to see any part of the hospital converted into a barrack. The hospital would soon be defaced, and other irregularities would arise, if men not requiring hospital treatment, were to be lodged near to the sick.

143. But the building might be divided into three separate parts, might it not?—It might, but even were that effected, my objections would stand.

144. Have you ever turned over in your mind how you could feed this hospital with patients to enable you to make it a more efficient medical school?—No.

145. Have you ever considered the possibility of admitting civilians to it to be treated?—Never.

146. I understand that in the military hospital at Vienna they not only admit civilians, but they admit women for the purpose of giving practice. Were you consulted as to the site of Netley?—I did not see it before the ground was selected, and I believe purchased.

147. You were not consulted as to the locality?—The ground was selected before I saw it; but I afterwards went there, carefully examined the locality, conversed with the inhabitants for some miles around, and had interviews and correspondence with medical men of Southampton, &c., and I then expressed my approval of the situation.

148. Did you think it was better there than being near a large garrison town?—There are only three large garrison towns near which it could have been, Plymouth, Portsmouth, and Chatham, and to these disadvantages attach.

149. (*President.*) You contemplate making Netley a medical school to a certain degree, and you expect to have forty probationers there?—Forty young medical men, part of them will be commissioned, and part not.

150. Did you have them at Chatham?—Not so many as forty. I contemplate forty in all. The number to be probationers and the numbers to be assistant-surgeons will require to be fixed.

151. You give them their quarters, do you not?—Yes.

152. But they have not quarters at Chatham?—The three senior probationers have.

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153. You give 6*s.* per day now to the three senior probationers?—Yes.

154. Without quarters?—No, with quarters; and the allowances of an assistant-surgeon, coals and candles.

155. What do the others receive?—Nothing till the three seniors leave.

156. They lodge in the town, I presume?—Yes.

157. At Netley you would give quarters to all?—Yes, and pay.

158. (*Sir Thomas Phillips.*) The same scale of pay?—This has not had my attention.

159. (*President.*) Do you contemplate permanent instructors there, professors who shall be selected for that purpose, not coming by roster, but who would be there permanently to give pathological instruction and clinical instruction, and be curator of the museum, &c.?—Yes; and they should be men with fixed salaries, not looking to advance in the department; as soon as a medical officer gets nearly the top of the officers of his grade, he aspires to promotion.

160. You would give them the charge of the hospital as well as of the instruction?—They might have charges, so far as those might be useful for the purposes for which they were employed.

161. They are not to treat the sick, but simply to treat the students?—They would, I think, be principally required for the instruction of the latter.

162. (*President.*) Can they teach the students without treating the sick?—The students would have the run of the hospital, and the instructors might have a few sick under their charge, to which they could more specially direct the attention of those engaged in study.

163. I presume that no man can give clinical instruction without treating?—No.

164. (*Sir James Clark.*) You mean the professors to the institution?—Yes; the professors should not be liable to be removed to serve on foreign stations.

165. (*President.*) How many should you say?—Two, or perhaps three.

166. (*Sir Thomas Phillips.*) Surely no man could give clinical instruction without treating?—I see no reason why the medical officers who treat the sick should not give clinical lectures.

167. (*President.*) You would have a pathological instructor, who else would you have?—I would have another instructor, at least, to impart to the students all the information which it is desirable medical officers of the army should possess, and which is not communicated fully by the professors in the different medical schools of the kingdom.

168. Have you ever contemplated such a thing as having a certain number of paid fellowships to be awarded by competition like a scholarship at Oxford, to be held by a student for a certain period with an annual payment. Would that in your opinion stimulate the exertions of young men in addition to their pay?—Such would possibly prove useful if we could get the money. If a money reward were to be granted to some who most distinguish themselves, I think it would excite to exertion—say 100*l.* to each for a year or two.

169. You would not want more than 50*l.* a year in addition to the honour and credit?—I dare say such an amount would prove very useful.

170. Do you take any measures to encourage officers abroad, to contribute to the museum by sending home contributions to Chatham?—Yes; but of late it has not been done so much as formerly, because now the wants of the museum are comparatively few. The collection is so rich that rarely are preparations obtained which differ from those already at Chatham.

171. Were there any preparations of bones and amputated limbs from Scutari?—I am sorry to say not many; they went elsewhere.

172. (*Sir H. Storks.*) To what place did they go?—To different museums in civil life.

173. (*Mr. Stafford.*) You did not get many from the Crimea?—Not very many.

174. (*President.*) You want space, do you not, at Chatham for the museum?—Yes; still we could find room for more than we have.

175. You have things now, have you not, which you cannot place?—Yes; but many of them are duplicate specimens, and therefore not of much value for the museum.

176. Do you think it would be of value, with a view to stimulate industry and love of distinction, if cases were published with descriptions of them where the descriptions were good, and the cases were curious and important, in some medical journal, with the names of the officers who have drawn them up?—An opportunity to do this exists at present, but comparatively few officers take advantage of it; officers are not merely permitted, but they are encouraged to publish.

177. Does not that supply an argument for promoting men who have distinguished themselves by merit?—Yes.

178. (*Sir Thomas Phillips.*) Are you of opinion that there are no means whereby men who have been in the service as assistant-surgeons, should be induced to study before they obtained their next step. Are there no means available for bringing them back, and placing them at Netley?—Yes; they might be brought home and placed at Netley, if the Government would incur all the expenses that would be required, were such a plan observed.

179. If it is a mere question of expense, would not the expense be well employed in accomplishing that end?—I think so.

180. (*President.*) In the same way, I think you hold the opinion that provided it does not interfere with their military duties in hospital, you see no objection to officers upon foreign stations, or I suppose at home, engaging in private practice?—None, on the understanding that it should not interfere with their public duties.

181. Do not you find that it tends to the promotion of their public duties, as practice is a great source of efficiency in a medical man?—It may in that respect prove of advantage.

182. You see no objection to it?—None whatever.

183. (*Sir H. Storks.*) Do not military medical officers engage in a good deal of private practice where they can get it?—Yes; they are allowed to do so.

184. They also gratuitously attend people, do they not?—Yes; probably more in that way than for payment.

185. (*President.*) I suppose as officers never remain for any long time upon any one station, there is no danger of their obtaining, in competition with others, so large a practice as to interfere with the proper discharge of their military duties?—Many officers remain sufficiently long on one station to admit of their acquiring a considerable amount of private practice if they are inclined to undertake it, but care is taken that no one taking private practice shall neglect his public duties for the sake of such practice.

186. (*Mr. Alexander.*) Is there a roster kept now?—Yes.

187. Is that made known publicly to the department?—No.

The witness withdrew.

Sir JOHN LIDDELL, C.B., Director-General of the Medical Department of the Navy, examined.

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188. (*Sir James Clark.*) There is an examination of candidates, is there not, before they are admitted into the naval medical service?—Yes.

189. By whom is that examination conducted?—It is conducted by a board of medical officers, or by myself.

190. Are they of your selection?—They are selected by the Admiralty.

191. Of whom do they consist?—They consist of the Inspector of Greenwich hospital, the Inspector attached to Somerset House, and the Deputy-Inspector of Woolwich Hospital.

192. Will you state the course of examination which you pursue with regard to the candidates before you receive them?—Yes. It is very much the same as in the army. It embraces every subject connected with medicine, as will be seen by this paper. (*The same being handed in, vide Appendix No.* II.)

193. Is your examination conducted by means of written papers, or is it a *vivâ voce* examination?—It is conducted in both ways.

194. You have no practical examination, have you?—No.

195. Would you propose any alteration in your present mode of examination?—No. I think it a very perfect test of the candidates' attainments as it is.

196. Do not you think that a practical examination would be very useful for the purpose of testing the young men on practical anatomy and clinical medicines?—We take certificates of attendance on practical anatomy from established institutions, on the first examination. But at the end of three years we require a certificate of the officers having performed all the operations of surgery.

197. Have you occasion to reject many candidates?—Yes; the rejections are rather numerous.

198. Can you state the proportion?—The last proportion was four out of seven.

199. (*President.*) Do you know what it is in comparison with the army?—No, I do not; but this was unusually large.

200. (*Sir Henry K. Storks.*) What is the average generally?—I should suppose about one-sixth.

201. (*Sir James Clark.*) Do not you think that if you had an opportunity it would be desirable to examine candidates on their practical knowledge in anatomy?—No doubt it would give greater security for their attainments.

202. When a candidate has passed his examination, how do you dispose of him?—We appoint him at once to a ship or to a naval hospital.

203. Is it not advisable always to send them through a naval hospital?—My own opinion is, that it is better to get them on board ship at once, and to let them go to a naval hospital afterwards.

204. Do not you think that an assistant-surgeon could gain a great deal more experience at a naval hospital?—He could only gain the same experience that he had learned in a civil hospital. There is nothing peculiar in the diseases of our naval hospitals, or at all of a special nature.

205. He would get a great deal of practical knowledge there, would he not?—It would be just the same that he had previously had at a civil hospital.

206. If it is thought that he has obtained very little practical knowledge previously, you do not test him?—We test him so far as we can by examination.

207. (*Mr. Martin.*) What are the advantages that young men derive from being on board ship?—They get familiarized with the habits and the disposition of seamen, and the forms and routine of duty on ship board.

208. You bring them back afterwards to the hospital, do you not?—Then they come back very advantageously, and it is a great boon to them to get appointments of that kind.

209. Do they receive any preliminary instruction in naval hygiene?—None.

210. Do not you think that it would be a great advantage to them to receive instruction in sanitary science?—I think that that is the advantage of sending them on board ship at once. They do not fall into the discharge of important duties at once; they are under the control and direction of the surgeon.

211. Is there in the navy any such work as a manual of sanitary science for the instruction of young naval officers?—We have many on naval surgery (but none specially on sanitary science), from Dr. Trotter and Sir Gilbert Blane downwards.

212. Would it not be an advantage to have a manual or a code of sanitary science for the benefit of young naval officers?—No doubt it would.

213. Comprising all the knowledge now accumulated?—Yes, it would be important; part of this, however, is now given by the statistical reports of the navy, which are regularly published.

214. (*Mr. Alexander.*) Do you find that a sufficient number of candidates come forward for competition?—Yes; they are now sufficient for our wants.

215. How many in the course of a year do you generally have?—It would be difficult to say. This last year we have admitted sixty-five.

216. (*Mr. Stafford.*) The pay has been increased, has it not?—Yes.

217. (*Mr. Alexander.*) How often have you competitive examinations?—None, not in the usual acceptation of the word; it is so far competitive that we have a standard of qualification, and if candidates do not come up to that standard they are rejected.

218. (*Sir James Clark.*) Are the naval hospitals supplied with libraries and museums?—Yes, two of them; the two large ones of Plymouth and Portsmouth.

219. (*Mr. Martin.*) Is that the case in any of the hospitals in our great foreign possessions?—No.

220. (*Sir James Clark.*) You have a second examination, have you not, before you promote?—Yes.

221. When does that take place?—At the end of three years' service.

222. It may take place then, but not necessarily so?—It cannot, by the navy regulations, take place before. He is not admitted to promotion till after three years' service.

223. Does the second examination differ from the first?—It is more practical.

224. (*President.*) And more special, is it not?—It chiefly embraces the same subjects as the first. We endeavour to get as much knowledge of the capacity of the individual as we can.

225. Is the examination conducted by the same board?—No; it is either by myself or the medical inspector attached to Somerset House.

226. Do not you require them before passing the second examination to spend some time at a medical school to practise dissecting?—Yes, they must attend a dissecting school for some time, not only to improve their knowledge of anatomy, but to perform the different surgical operations. They cannot be admitted to the examination until they produce a certificate from a professor, that they have performed all the operations in surgery with the requisite skill. (*Vide Appendix No.* IV.)

227. (*Sir Henry K. Storks.*) Are naval surgeons required by regulation to make post-mortem examinations?—They are not enjoined to do so, but they generally go through the same forms as one would with one's relations on shore.

228. But they are not enjoined to do it?—No; it would in many cases be attended with very great inconvenience on board ship, on account of the prejudices of seamen during prevailing diseases; however it is generally done; but this precaution is taken that the messmates are asked whether they have any objections, and if not it is done.

229. (*Mr. Stafford.*) Is that course pursued in every case?—In every case the death is reported to me,

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and a reason is assigned for a post-mortem examination not having taken place.

230. (*President.*) You stated that it was an advantage to an assistant-surgeon to go at once to a ship rather than into a hospital?—I think so.

231. But an assistant-surgeon does not stand in the same position in the naval service as in the army, he does not treat nor operate, does he?—No; he merely assists the surgeon.

232. He only watches?—He assists the surgeon in all his duties.

233. In a ship he operates under the veto of his superior officer?—He does not operate at all unless in medical charge.

234. In point of fact he is a student more than anything else with you?—He acts with the surgeon.

235. (*Mr. Stafford.*) He gets accustomed to the sea, does he not?—Yes.

236. And that is the great reason, is it not, why he is sent on board ship at first?—Yes.

237. (*Sir James Clark.*) When you require a certificate that he has attended a dissecting school, do not you also require him to have a certificate that he has attended clinical lectures, and studied medicine and surgery?—We require all that at the first examination.

238. Is he kept on full pay when he is on shore?—No.

239. Is not that a great hardship?—Yes.

240. He is acquiring knowledge, is he not, for the good of the service?—Yes; it would be very important to the service if a surgeon could be kept on the ship's books for a month or two after he comes on half-pay, to renew his studies at one of the schools of medicine.

241. (*Sir Thomas Phillips.*) Is there any period during which you require them to study afterwards?—No; they require to bestow a certain amount of attention to get through the examination.

242. What time do they require?—A fortnight or three weeks. It is merely practical anatomy and the operations.

243. Merely to attend the demonstrations?—No, to perform the operations in person.

244. In practical anatomy and in surgery?—Yes.

245. These are the two subjects that they are required to devote themselves to after they have been on ship board?—Yes, after they have served three years.

246. And that you say need not occupy them above a fortnight?—A fortnight or three weeks.

247. The rule is imperative, is it not, that they should devote a fortnight or three weeks to operations?—They must devote a sufficient time, and then their general attainments are tested, and if they fail they have to renew the examination at some other period.

248. Is that time adequate?—Yes, with the knowledge that they have previously acquired.

249. Should it be extended, do you think?—It might be with advantage.

250. (*Sir James Clark.*) If it were extended to six months on full pay, you would require attendance on clinical lectures?—Yes; that would be a great benefit.

251. (*President.*) In the case of a young assistant-surgeon, who, say two years and six months after he has entered the service, goes out to a four years station in the Pacific, how do you examine him?—There is a local examination, if necessary, in order to give him the position of an acting surgeon, but still he must pass a second examination when he returns home, before his promotion is confirmed and dated back.

252. He is promoted, is he not, subject to passing his examination on coming home?—Yes; it is required that the examination abroad should be by three naval surgeons to see that he is qualified.

253. (*Mr. Stafford.*) Does it often happen that a man who has passed a local examination fails when he comes home?—I do not recollect an instance; it is quite possible; he is not let off a bit easier.

254. (*Sir Thomas Phillips.*) Have you ever known an assistant-surgeon fail to pass an examination at the end of three years?—Occasionally; and he is remanded for further instruction.

255. (*Sir Henry K. Storks.*) Then he gets another chance of examination?—Yes.

256. You do not strike him off the list?—No.

257. (*Sir James Clark.*) You have four ranks of medical officers in the navy, have you not?—Yes.

258. (*Sir Thomas Phillips.*) What are they?—An inspector, a deputy-inspector, a surgeon, and an assistant-surgeon.

259. (*Sir James Clark.*) Could you state the number of each in the navy?—There are five inspectors employed and one unemployed; ten deputy-inspectors employed and five on half pay; there are about 186 surgeons employed and about 142 unemployed, many of whom could not serve if called upon.

260. (*Sir Henry K. Storks.*) They are on half-pay, are they not?—Yes.

261. (*Sir James Clark.*) Have the medical officers their fair share of promotion as compared with other officers in the service?—Yes, I think so, in the case of assistant-surgeons, but certainly not in the higher grades. There are 262 assistant-surgeons employed and three on half-pay. Those are only on half-pay because they are not in a very fit condition to serve.

262. (*Mr. Alexander.*) How does promotion take place? is it by selection or seniority?—Partly both. If merit is equal it is always by seniority.

263. (*Sir James Clark.*) Do you see any objection to a board being established to examine candidates on entrance into the navy and army?—No; but I think it would be very desirable that the head of the medical department should be one of the examiners. It is a very important element in acquiring a knowledge of their attainments. I do not know any special objection that could be made to it.

264. (*Mr. Martin.*) On professional grounds?—No.

265. (*President.*) You are aware, are you not, that the East India Company's examinations are so conducted?—Yes.

266. Do you know anything of the success of their plan?—I am told that it is very successful; but it is a very favourite service.

267. (*Sir Thomas Phillips.*) Might not the heads of departments preside at the examination?—Yes.

268. (*President.*) Do you give any lectures at Haslar?—Yes; there are three months in the year in which clinical lectures are enjoined, but they have not been very successful. You cannot get persons to attend, there are so few assistants in the hospital.

269. Who are the lecturers?—The inspector and the deputy-inspector.

270. Whoever they may be at the time, without reference to their qualifications?—Yes.

271. The lectures are not invariably very attractive, are they?—No; but if we had a Guthrie it would not be possible to ensure an audience. It is inconvenient getting to Haslar from a ship at Spithead.

272. (*Mr. Martin.*) Should not such instruction be matter of order and imperative upon officers coming home?—Yes.

273. For officers coming home sick?—Yes; if capable of study.

274. (*President.*) Practically you think that the real cause of difficulty has been that the assistant-surgeons are in ships at Spithead two or three miles off, and that there is great difficulty in their getting ashore?—Yes, and the expense too. If you made it compulsory no doubt it would be beneficial. I do not know that it would be beneficial if you selected officers from the institution itself; but if you had a special professor it might do better; it would very often happen that they would be lecturing to bare walls. At this time there is not a ship at Spithead, and it is now the period for lectures.

275. The number of assistant-surgeons in the hospital itself is very small, is it not?—Yes.

276. That is a peculiarity of the naval service?—Yes.

277. (*Sir James Clark.*) If all the assistant surgeons were to pass a certain time at a naval hospital, you would then generally have a considerable number there if you kept them a year?—Not unless you increased the number far beyond our wants.

278. On the average, how many assistant surgeons are taken into the navy annually?—Last year there were sixty-five; the number varies very much.

279. (*President.*) You mean after the conclusion of the war?—Yes.

280. Would that be the annual admission in peace?—I should think it would be less than that.

281. (*Sir Henry K. Storks.*) Are there a great many who leave the navy after having remained in it some time?—Yes, a great many.

282. Do you happen to know the proportion?—I cannot tell exactly.

283. (*President.*) Which go the first?—It is always the best that resign the service.

284. (*Sir Henry K. Storks.*) What is the pay of an assistant surgeon?—When he first enters it is 8*s.* 1*d.*, and it goes on increasing to 10*s.* 1*d.* a day.

285. After how many years' service?—After ten years' service it is 10*s.* 1*d.* when in charge.

286. That is the highest, is it not?—Yes, that is the maximum of an assistant surgeon's pay.

287. (*Sir James Clark.*) When he comes to be a surgeon what is his pay?—His first pay is 11*s.*; then it goes on to 12*s.* and 14*s.*; and then there is a long stop. He has to serve ten years without any increase.

288. (*Mr. Stafford.*) Have they any other allowances?—None.

289. (*Sir Thomas Phillips.*) Is Haslar Hospital occupied as a place of instruction for the navy?—Not at all; only for the care and cure of the sick.

290. Have you any hospital at all where naval students are instructed?—None; that is the largest and best, and best calculated for a school of that kind.

291. And the most convenient?—Yes. It is a little inaccessible.

292. Is the number of patients large at Haslar?—Yes; at present there are about 500.

293. Does it ordinarily supply that amount of instruction to young men?—That is the average number of sick.

294. (*Mr. Stafford.*) Are there 500 patients exclusive of the lunatics?—No, it is inclusive.

295. How many lunatics are there?—One hundred and twenty.

296. (*Sir Thomas Phillips.*) None but men are admitted?—None but men.

297. (*President.*) Do you exact the courses in Dublin and Edinburgh, or do you prefer young men who have gone through military and naval hygiene?—No; I think we get them just as well from the London hospitals.

298. You do not prefer their having been through that course which is special?—No.

299. (*Sir James Clark.*) You would rather have a sound course of common surgery?—Yes; common surgery is military surgery, I think.

300. (*President.*) There is a good deal of work on shore with the marines, is there not?—Yes.

301. There are diseases peculiar to seamen, are there not?—I am not aware that there are any diseases peculiar to seamen.

302. Is not their mode of life and provisioning one which produces peculiar diseases; formerly there was more scurvy?—Yes; but I have seen more scurvy in the Paris hospitals than I have seen at sea. There was a great deal in the Black Sea from defective or innutritious food, but with their ample general diet this disease is most unusual.

303. (*Sir Thomas Phillips.*) The diet is the subject of hygiene with you, is it not?—Yes.

304. (*President.*) Do you encourage your officers to send you home scientific reports?—Yes; I have periodical medical reports from them every quarter, statistical and descriptive of the country where they happen to be, and the diseases.

305. What do you do with them?—I read them, and they are kept for future reference. *Sir J. Liddell, C.B.* 13 May 1857.

306. You never attempt to select them and publish them?—Never publish them, but the best journals are selected for a prize established by Sir Gilbert Blane.

307. Have you ever contemplated that?—Yes; I have tried to find some means of doing it, but I should say that we have our statistics published periodically in a blue book which embraces the greater part.

308. You do not send contributions to medical science from the results of the experience of your medical officers?—No. If the officers wish anything to be published they ask my permission, which is never refused.

309. Do they practically do so?—Yes.

310. With a view to obtain reputation?—Yes.

311. Does that influence their subsequent advancement?—Yes, it always tells in their favour.

312. Do you promote them by selection?—Yes, and seniority.

313. Seniority is the great element?—Yes.

314. Do you find that many complaints are made of the selections?—I dare say there are, but they never reach me.

315. (*Sir Thomas Phillips.*) Are the Commissioners to understand that you regard this as the best mode of improving the knowledge of a young man, namely, that he should first go to sea after you have admitted him, and that after having been at sea a given time he should then pass a longer period than is the case at present in increasing his knowledge of his profession?—Yes, decidedly; and that course we pursue. When we get an assistant-surgeon of sufficient standing we appoint him, if possible, to a hospital for twelve months or more.

316. (*Sir Henry K. Storks.*) It would be necessary, would it not, to give them full pay after the ship has been paid off?—That is very desirable. The great objection to our service is that when surgeons are paid off they remain a long time on shore, and during that period their time is forfeited.

317. (*Mr. Martin.*) So that all that time is practically lost for improvement?—Yes, unless they study at their own expense.

318. (*Sir James Clark.*) What leave do you give them?—There is no specific leave. Unfortunately, we give surgeons longer than they want. We have about 140 now unemployed.

319. You do not give them full pay, even for a few weeks' leave?—If it is a few weeks from a hospital or a ship, then their pay goes on; but if they are discharged from the ship and go on half-pay, there is no further allowance made.

320. (*Mr. Stafford.*) Do they contribute many specimens to the museum at Haslar?—Yes. It is a very valuable museum. It is, I fancy, the most valuable museum in England for dried specimens, which were chiefly prepared under Sir John Richardson's directions.

321. You have a good pathological museum, have you not?—Yes.

322. (*Sir James Clark.*) You think that it would be of great importance that a naval surgeon on half-pay should be kept on full pay?—It is very desirable that it should be so for a certain period, for the purpose of instruction; both the individual and the service would gain.

323. (*Mr. Alexander.*) How many of the four ranks you have mentioned are executive?—They are all professionally executive. The higher they rise in the service the more laborious is their professional duty.

324. (*President.*) You place the greater responsibility of the medical treatment on the higher officers?—Yes.

325. How do you manage with the administration of the hospitals, which in the army forms one of the higher branches of the medical profession?—There is an agent or steward to all our naval hospitals, who demands all the stores that the hospital requires, and keeps them up. In fitting up the Belleisle hospital ship for China it was done in a few days. We know

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that if certain stores are sent the hospital will be complete.

326. Have you everything laid down for every patient?—Yes.

327. You tell the agent the number of patients that he is to prepare for?—Yes.

328. (*Mr. Alexander.*) Your hospitals are complete, are they not, in everything in that respect?—Yes.

329. You supply all your patients with spoons, knives and forks, and shirts from those stores?—Yes, everything; including their clothing.

330. (*President.*) Your ration includes a good many things, does it not, which are extras in the army hospitals?—I am not quite sure what the army extras are. We have none in our diet. Our diet embraces everything that is requisite for the sick.

331. (*Mr. Alexander.*) Have you extras, such as wine and porter, and such things?—In the diet there is a certain portion of wine or beer allowed for the diet, but it may be lessened or increased as the case may be.

332. (*President.*) Are sugar and arrowroot included in the diet?—No; those are called medical comforts, and are prescribed by the medical officer in the prescription book in the same way as wine and porter, and are supplied by the medical storekeeper.

333. (*Mr. Alexander.*) Do you enter every case in your register?—Yes, every case.

334. (*Sir Henry K. Storks.*) Who enters it?—The surgeon. When a patient is received from a ship into hospital, which is the usual source of our patients, the case is sent by the surgeon of the ship, descriptive of what took place previously to his admission, and a medical officer of the hospital makes a record of his state, and keeps up that to the close.

335. What is the register a shipboard?—That consists of a sick list, which contains the man's name in writing, the day that he was put on the sick list, his disease, and when he was discharged. If the complaint is of importance there is a regular detailed record kept by the surgeon in the journal which is sent to my office every year.

336. (*Mr. Martin.*) A regular case book?—Yes.

337. (*Mr. Alexander.*) A trivial case is entered, is it not, in a sort of admission and discharge book?—Yes; the daily sick book, we call it.

338. They do not report every day upon those cases?—No; the surgeon transmits it with his annual account, so that every case which occurs is reported.

339. (*President.*) He only gives the details of the case and the treatment if it is a very peculiar and important one?—Yes; the great mass of cases treated by the surgeons consist of bruises, ulcers, and boils, or anything that disqualifies a man from using his hands or legs.

340. (*Mr. Alexander.*) Are those cases entered?—Yes. Every man who is unable to do his duty can only be exempted by being put on the sick list, and that appears at the end of the year, however trifling. If he has a headache for a night, he goes on the sick list.

341. (*Sir James Clark.*) They only record cases of importance?—In the journals; but they record every case in the sick list.

342. (*Mr Alexander.*) With regard to the registry of every case, if a man has a black eye, do you say that he has a bad eye, and so on?—Yes; that would come under the head of contused eye; every case that the surgeon has under his care is reported.

343. Could you furnish the Commissioners with a copy of the registers or journals?—Yes; the sick list, the journal, and the nosological return.

344. Would you also furnish them with the instructions to the agent, showing what things he has to provide, and the diets?—Yes; I will hand in this book (*the same was delivered in*).

345. (*Sir Thomas Phillips.*) By whom are the medicines prepared on shipboard?—By the assistant-surgeon.

346. He makes up the preparations?—He compounds the prescriptions.

347. He is the dispenser of the ship?—Yes.

348. (*Mr. Alexander.*) On shore you have a dispenser, have you not?—Yes, at the naval hospitals.

349. Have you a purveyor, who supplies all the diet?—Yes; the agent issues all articles of diet.

350. Does he make the contracts?—No; contracts not made in London are submitted to the Admiralty for approval.

351. Who makes the contract?—The Admiralty generally, excepting abroad.

352. (*President.*) Is the agent the same person as the steward?—Yes.

353. (*Sir Henry K. Storks.*) Does he make up the diet-rolls?—There is a diet-table kept by the medical officer, which he makes up every morning in his round of the wards, and that is sent to the agent, to procure the materials. The food is entirely in the hands of the steward; but for clearness the scale of diet is written on this paper (*producing a printed form*) in order that the medical officer may see on what diet a man is.

354. (*President.*) Will you read the articles of the diet?—It is a scheme for full diet for the patients of the Royal Hospital:—A pound of bread, a pound of mutton or beef, a pound of potatoes or greens, 25 drams of herbs for broth; barley, 14 drams; salt, 8 drams; vinegar, 16 drams; tea, 4 drams; sugar, 16 drams; milk, $\frac{2}{6}$ths of a pint; broth, one pint; small beer, 2 pints, or strong beer, $1\frac{1}{2}$ pint. Veal, fowls, fish, in such quantities, in lieu of beef or mutton, as the medical officer may prescribe. There are four different descriptions of puddings for low diet.

355. (*Mr. Alexander.*) Then the steward and agent provides everything for the hospitals ashore?—Yes.

356. (*Sir Henry K. Storks.*) What does a seaman pay in the hospital?—Nothing.

357. (*President.*) Is this the whole code for your medical departments?—For the hospitals. There are additional instructions for the service afloat, and foreign hospitals, which I will send the Commissioners.

358. Do those embrace the whole?—Yes, they embrace the whole.

359. You have no unwritten law?—No; the head of the establishment would use his discretion in matters not specially provided for in these instructions.

360. So that every man can find in these two books everything that is wanted?—Sufficient to guide him in his general duties.

361. (*Sir James Clark.*) In twenty-four hours you can supply everything that is necessary?—Yes; we can do it in a day. We have a store at Deptford and at Haslar.

362. (*Mr. Alexander.*) How are the repairs in the hospital performed?—We send in, in November, so as to be in time for the navy estimates, an estimate of what we require during the year—whitewashing, repairs of building, &c.—and these are done in the course of the year, as suits the convenience of the hospital.

363. Who carries this out?—It is either done by contract or by employing people to do it, under the directors of works.

364. Has the medical officer the power to do that?—No; he has the power to request it to be done.

365. The purveyor has the sole charge of everything in the hospital, has he not?—Yes, of all stores.

366. Is he under the senior officer of the hospital?—There is the superintendent, who has authority over him as he has over the whole of the officers.

367. The superintendent is under the principal medical officer, is he not?—No.

368. I mean that the steward who issues the diet is under the charge of the principal medical officer?—No.

369. (*President.*) Suppose that the agent did not provide the hospital properly, what would be done?—Then he would be complained of.

370. By whom; by the principal medical officer?—He might be; or by the superintendent.

371. To whom?—To the Admiralty.

372. (*Mr. Stafford.*) He would complain to the Superintendent of Haslar Hospital, who would report him to the Admiralty?—Yes.

373. (*President.*) Could he dismiss him?—No; that would be a very serious question.

374. Could he try him?—He could suspend him from duty and report him to the Admiralty.

375. You have hospitals abroad?—Yes.

376. There, when you cannot wait, how is it?—There the deputy inspector is also the agent and steward. He has a clerk to keep his accounts, but he takes the place of the steward of our home hospitals.

377. Does he buy, and make contracts for the hospital?—Yes.

378. He is the commissariat officer for the hospital, is he not?—Yes.

379. (*Sir Henry K. Storks.*) He orders what is required?—Yes, everything; and he gives security as a cash officer.

380. Does every deputy inspector do that when he goes abroad?—Yes; when he goes to a hospital.

381. Does this system work well?—Admirably.

382. (*Sir Thomas Phillips.*) What class of officer is the superintendent of a hospital?—A captain in the navy.

383. He is the executive head?—Yes.

384. Everything is done on his responsibility?—Yes; except the medical duties.

385. (*Mr. Alexander.*) At each naval hospital is there one of those superintendents?—Yes, at home; that is in the two hospitals at Plymouth and Haslar.

386. (*Sir Thomas Phillips.*) The inspector has a large practice, has he not?—Yes; the higher they rise the more professional labour they have.

387. (*Mr. Alexander.*) Have you a long room in which the washing is performed, which is done by women?—We have a regular washing house.

388. Have you cooks set apart for the purpose of cooking for the hospital?—Yes, specially set apart.

389. (*Sir James Clark.*) Have you female nurses?—Yes, for the medical wards, and men for the others.

390. (*Mr. Alexander.*) Do the women answer well?—Yes.

391. In what proportion are they?—One for every seven patients.

392. And for the men, is the proportion the same?—Yes. We give the preference to seamen's wives or widows.

393. (*President.*) Do you get any nurses from the London hospitals?—No.

394. At what rate do you pay them?—The female nurses have 20*l.* a year, and their provisions and clothing. The men have 1*s.* 6*d.* a day, and their provisions and clothing.

395. (*Sir James Clark.*) When you have done with the nurses, what do you do with them, do you discharge them?—Yes; I am sorry to say we do.

396. (*President.*) Do you discharge them when they become unfit from age?—Yes.

397. You cannot take them in young, can you?—Yes.

398. Do the young ones ever give you any trouble?—Occasionally; but less than the old.

399. (*Mr. Alexander.*) Have you hospital accommodation for sick officers?—Yes.

400. In all your general hospitals?—Yes.

401. (*Sir Henry K. Storks.*) They are treated as the seamen are, are they not?—Yes; they have cabins according to their rank in the navy, one or two. They have the same accommodation as on board ship.

402. (*Sir James Clark.*) Could the establishment of nurses be greatly improved?—Not now. Since the pay has been increased we get a very respectable class.

403. When you do not want their services, what do you do with them?—They are discharged on reduction; we always keep up a certain number, but if the number of patients is very much reduced then they are discharged.

404. (*Sir Thomas Phillips.*) Would no length of service give a right to a pension?—No; unless at Greenwich hospital, where they do receive pensions. It would be a real boon at naval hospitals.

405. (*Sir Henry K. Storks.*) Do the officers pay any stoppages while in the hospital?—Officers from ships on full pay are charged nothing for their subsistence in naval hospitals; but a limited number are admitted from half-pay, whose cases are likely to be benefitted by hospital treatment, and pay at the rates set forth in the following scale:—

CAPTAINS.

	s.	*d.*	
For the First Month, at the rate of -	0	10	per diem.
For the Second Month, at the rate of	2	6	„
For the Third Month, and beyond that period, at the rate of - -	3	0	„

COMMANDERS.

For the First Month, at the rate of	0	10	per diem.
For the Second Month, do.	2	0	„
For the Third Month, and beyond that period, at the rate of - -	2	6	„

LIEUTENANT AND WARD ROOM OFFICERS.

For the First Month, at the rate of	0	10	per diem.
For the Second Month, do.	1	3	„
For the Third Month, and beyond that period, at the rate of - -	2	0	„

Half-pay officers admitted into the lunatic asylum at Haslar are charged 1*s.* 6*d.* a day during the whole period they remain there, and 1*s.* 6*d.* a day is also charged to officers from full pay, after they have been a year in the asylum. The above deductions include all charges, and are for subsistence only.

406. And the officers who are borne on the ships' books pay nothing?—Nothing.

407. (*Mr. Alexander.*) Do you receive private and confidential reports as to how the officers conduct themselves?—None.

408. (*President.*) How do you judge of the merits of officers for promotion?—Principally from personal knowledge of them, and also from their medical returns.

409. (*Sir Thomas Phillips.*) When a ship is paid off, are reports made of the conduct of the medical officers?—Yes; every officer is obliged to produce certificates of his conduct.

410. (*President.*) By whom is the certificate signed?—The certificate of the surgeon is signed by the captain, and the assistant surgeon's by the surgeon and captain.

411. (*Sir Thomas Phillips.*) Are those certificates preserved?—Yes.

412. (*President.*) You judge of their merits likewise by their medical reports, do you not?—Yes; I peruse the journals, which is the best of all tests.

413. (*Sir Thomas Phillips.*) Do the statistics of disease on board ship afford you an opportunity of testing the merits of the treatment?—It helps us a little.

414. (*President.*) What should you say was the proportion of cases in which promotion goes by selection, as compared with seniority?—I think that there may be one-sixth by selection.

415. Is it as little as that?—Yes, I think so.

416. (*Mr. Alexander.*) An assistant-surgeon must have served three years before he obtains promotion, must he not?—Yes.

417. He can be a deputy-inspector after four years' service?—Yes, after being four years surgeon.

418. So that in seven years he may be a deputy-inspector?—Yes, he may be; but that has never occurred.

419. Have you compulsory retirement after a certain age?—Yes.

420. At what period, in the case of a surgeon, must he retire from the service?—A surgeon afloat must retire at sixty, a surgeon on shore at sixty-five, a deputy-inspector at sixty-five, and an inspector at seventy.

421. (*Sir James Clark.*) For what time are your officers at the hospitals appointed, is it for a limited

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time?—No; permanently, up to a certain age, except the assistant-surgeons.

422. Would it be advantageous to have a certain term fixed, say of five years?—No; I do not think so.

423. (*Mr. Stafford.*) For what reason?—Because I think you would lose the benefit of all their experience in the hospital, and you would appoint a young man who had not had an opportunity of acquiring that experience. I think that the public service would lose by that arrangement; and if you take him by seniority it does not follow that he has had much personal experience.

424. (*Mr. Martin.*) Seniority would appear to be almost the absolute rule for promotion?—Not for the higher grades. Seniority with merit, all things being equal.

425. (*Sir James Clark.*) Would it not be a great boon to an officer to have the chance of getting such an appointment?—Yes, no doubt it would, but I think it would be a great loss to the service.

426. Suppose you had an unfit man, what would you do?—Then you would supersede him.

427. Is your recommendation always asked before a man is appointed?—I think so always.

428. Is it always taken?—It is not always taken, but I do not think that any man is appointed without my concurrence.

429. But some that you propose to appoint are rejected, are they not?—That, I must say, happens very seldom.

430. Do you think that it would be advisable to extend the term of their appointment to the naval hospitals to ten years?—I do not think that the great body of them hold those appointments above ten years, They are very seldom appointed to a naval hospital under fifty.

431. At what age must they retire?—A deputy-inspector must retire at sixty-five, and an inspector at seventy.

432. (*Sir Thomas Phillips.*) What is the superannuated pay of officers who retire at those ages?—It depends entirely upon the length of service. (*See Appendix No.* VI.)

433. (*Mr. Alexander.*) You have a lunatic asylum, have you not, for sailors?—Yes, and marines.

434. Does a patient remain there until he recovers or dies?—Yes, unless removed by his friends.

435. Are the recoveries great in proportion to the cases?—Not very.

436. Are they equal to those treated in civil establishments?—Yes, quite. The proportion will be less now, as they have recently received pensioners from Greenwich Hospital, who being old men never recover.

437. (*Mr. Stafford.*) How long has that been the case?—I think for ten years.

438. (*President.*) The officer at the head of that establishment is a permanent officer, is he not?—Yes.

439. You do not allow them to come in rotation?—No.

440. When an officer is appointed, what means do you take to ascertain that he is acquainted with the special treatment of lunatics?—At first they were taken from the list of deputy inspectors.

441. That was a very bad arrangement, was it not?—Yes. Dr. Anderson was then appointed from a lunatic asylum, and he brought ours into its present high condition.

442. He had conducted an asylum under Dr. Conolly had he not?—He was connected with him; he had the charge of a civil asylum at Denham Park. The present superintendent was his assistant, so that he was thoroughly well instructed in his duties.

443. You are satisfied, are you not, that you can treat the lunatics better there than if you sent them to a private asylum?—We have the most perfect security. It is worth anybody's while to see the asylum at Haslar.

444. (*Mr. Stafford.*) Do you think that naval discipline is of use to the patients?—Yes. They are taken care of, and carefully watched, and exercised in the country, and in boating, fishing, &c.

445. Do you think that the habit of discipline kept up in a naval asylum is any assistance to these men?—It is possible that the regularity of their habits may conduce very much to their restoration.

446. (*Sir Thomas Phillips.*) That would be the case at any properly conducted asylum, would it not?—Yes; you have every variety of character, and there is a good deal of intellect left in most of the insane.

447. (*Sir Henry K. Storks.*) Have you many lunatics in the asylum?—There are 120 just now.

448. (*Sir James Clark.*) When they recover, what do you do with them?—We discharge them.

449. Do you ever take them back?—Occasionally they come back. If they are discharged from the service previously, they are not taken back into the service; but in the cases of delirium tremens, they recover and go back again to their ships.

450. They are sometimes taken away by their friends, are they not?—Very seldom.

451. You have sometimes officers who are lunatics, have you not?—Yes, officers of all grades.

452. (*Sir Thomas Phillips.*) Are all those persons who became lunatics sent to Haslar?—Yes; we have no other establishment. I am just sending an attendant for one now from Haulbowline. We call them attendants, not keepers.

453. (*Sir James Clark.*) The chief medical officer at Haslar has the complete command over the interior of the hospital, has he not?—Yes; over his own wards.

454. Can he direct everything as to the patients in cleaning the wards and so forth?—Yes.

455. (*Mr. Martin.*) Has he the entire sanitary as well as medical and surgical control of the hospital?—Yes; within the wards.

456. (*Mr. Stafford.*) Can he order any repairs?—No; he submits what he wants to the superintendent, who transmits it to the Admiralty, and then if it is approved, it is put into operation.

457. Is that the course pursued if a stove is wanted?—No; I referred to the repairs of the building.

458. He cannot undertake them on his own responsibility?—No; anything that is immediately wanted he must refer to the superintendent.

459. (*President.*) Cases of urgency do not often occur at home, do they?—No.

460. But abroad, supposing a case of urgency arose?—He can purchase abroad anything that may be wanted.

461. With regard to an alteration in a building, how would that be done?—He would send home an estimate in the same way.

462. Suppose the case of very offensive drainage, or leakage, what is the course pursued?—That is corrected immediately. The admiral of the station would authorize that.

463. (*Mr. Stafford.*) Would it be done in that way, say, at Malta?—Yes; if it was a thing of such urgency that it could not wait for the Admiralty authority he would do it.

464. (*Sir James Clark.*) Supposing that you wanted a stove, all that you would have to do would be to send down to the steward for one?—Yes.

465. (*Mr. Alexander.*) If he had not it, could he purchase it?—Yes; or he would apply to me if at a hospital at home. He cannot purchase any stores without sending to me a list of the things and the prices; and if I can procure them better and cheaper I supply them from London.

466. (*President.*) In an hospital abroad, you have one superior medical officer, who is the administrative officer?—He is also professional.

467. Does he treat patients?—Yes.

468. Would he operate and prescribe?—Yes.

469. All the officers of all ranks are concerned in the immediate and direct treatment of the sick, but one officer of the highest rank is administrative likewise in a foreign hospital?—Yes; in addition to his medical duties.

470. At home there is none?—None.

471. Are you satisfied that that is the best plan?—Yes; I think so.

472. Do you think that they give more attention to the medical duties from being relieved of the drudgery of the administration of the hospital at home?—The administration with a regular system is easy enough, and could be well performed by a medical officer, having the clerical work done by a clerk.

473. (*Sir Thomas Phillips.*) What number of medical officers have you usually attached to your hospitals abroad?—There is a deputy-inspector, a staff surgeon, and medical storekeeper, several assistants, and a clerk, being all under the directions of the deputy-inspector, who is responsible for the whole duties of the hospital.

474. (*Sir James Clark.*) What number of patients does the Malta hospital contain?—About 300.

475. (*Sir Thomas Phillips.*) There you have a deputy inspector with a certain staff of surgeons, have you not?—Yes.

476. And a storekeeper?—The deputy inspector is also agent in charge of stores, and there is a clerk to keep the accounts.

477. (*Mr. Alexander.*) Have you a dispenser there?—An assistant dispenser.

478. (*Sir James Clark.*) That is your largest foreign hospital, is it not?—Yes; I think that the hospital at Jamaica would contain 150, and Bermuda about 100.

479. (*Mr. Alexander.*) Have you tables placed between each patient, and everything in your wards which they require?—Yes.

480. Does the agent provide those?—Yes.

481. (*President.*) Are those in the list which the agent has?—Yes.

482. Is there a shelf over the patient's head?—We have done away with that, as it harbours the dirt, and we have given them a table instead.

483. Where does the patient keep his effects?—Patients' effects are kept in a store-room, and given up to them on their discharge.

484. (*Sir Henry K. Storks.*) Has each man a bed-ticket attached to his bed?—No; the prescription ticket lies upon his bed (*the form being handed in*).

485. By his prescription ticket you can see every day what treatment he has received, and the progress of his ailment?—Yes.

486. This is always attached to his bed, is it?—Yes.

487. (*Sir James Clark.*) You consider the sanitary condition of all your naval hospitals to be good?—Yes; I have seen nothing like them anywhere, and they have always been so.

488. (*Mr. Alexander.*) You have not much writing?—Not much on board ship, but a great deal in the hospitals.

489. (*Sir Thomas Phillips.*) Would this paper be the paper placed upon the bed of the patient?—Yes, at the bottom of his bed. When the medical officer goes his round he takes it up and marks it, and then the tickets are collected by the nurse and taken to the dispensary for the medicines.

490. (*Mr. Martin.*) Have you convalescent wards?—No; unless for infectious complaints. When the disease ceases we remove the patients into another ward; not along with others, but separately. We do not keep convalescent wards.

491. Not as a standard rule?—No; we find it answer much better to have a certain number of healthy men with the diseased ones.

492. (*Sir James Clark.*) Have you not fever wards?—Yes; in infectious cases. We separate such cases as erysipelas. They are always in separate wards.

493. You put them into one ward, do you not?—No, in separate wards; measles in one, small pox in another, and scarlet fever in another.

494. (*Mr. Alexander.*) You use crockery and tin, I believe?—We have some tin, but very little, we prefer crockery.

495. Have you water-closets, with abundance of water?—Yes.

496. When a ship surgeon sends in a requisition for medicines to the storekeeper, do you require a certificate?—Yes; the regular scale of medicines is supplied to all the ships every year or oftener. If a surgeon wants any partial supply, he sends a requisition to the medical storekeeper of the hospital, who supplies him.

497. He gets it without any approving signature?—Yes.

498. (*Sir Henry K. Storks.*) The male and female nurses have rooms to themselves, have they not?—Yes.

499. They never sleep in the wards?—No; we have a cabin or screened berth attached to each ward.

500. (*Mr. Alexander.*) How many cubic feet do you allow to each patient?—About 1400 feet. We always keep four feet between each bed.

501. (*President.*) From edge to edge of the bed—that is, about six feet from head to head of the patients?—Yes.

502. What is the width of the bed?—About three feet.

503. (*Sir Thomas Phillips.*) Then it is about six feet, or six feet six inches?—Yes.

504. (*President.*) Have you wards in which there are beds on both sides?—Yes.

505. What distance is there between the beds in those wards?—Our beds are about six feet two inches long, and the wards are twenty-four feet broad.

506. (*Mr. Stafford.*) What height are they?—They are fifteen feet high.

507. (*President*). What cubic contents does that give?—About 1,400, I think.

508. (*Mr. Martin.*) Is it as much as that?—Very nearly.

509. (*Sir Thomas Phillips.*) What is the length of your ward?—Somewhere about sixty feet, and besides this, in the recesses of the windows, we have additional space.

510. How many beds are there in the ward?—Fourteen.

511. You say about 1,400 feet?—Yes; I think beyond that is lost space; the new London hospitals are all going upon 2,000 to each patient.

512. (*Mr. Alexander.*) You have some phthisical wards, have you not?—Yes; I do not think that the hot air ever does,—patients cannot endure it, it is so heavy, close, and exhausting. We have them fitted to all our hospitals, but we never use them.

513. Have you tried hot water?—Yes.

The witness withdrew.

Adjourned to Friday next, at One o'clock.

Friday, 15th May 1857.

PRESENT:

The Right Hon. Sidney Herbert, M.P.	Sir Thomas Phillips.
A. S. Stafford, Esq., M.P.	Sir James Clark, Bart.
Sir H. K. Storks, K.C.B.	J. R. Martin, Esq., F.R.S.
Dr. Andrew Smith.	Dr. John Sutherland.
T. Alexander, Esq., C.B.	

President, the Right Hon. SIDNEY HERBERT, M.P.

Sir Benjamin Collins Brodie, Bart., F.R.S., examined.

Sir B. C. Brodie, Bart., F.R.S.

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514. (*President.*) You are aware, are you not, of the conditions which are now required in candidates for admission into the army medical service?—I know something of them.

515. You know the diplomas that are required, and you have seen this paper (*handing a paper to the witness*) ?—Yes, I have.

516. They are allowed, are they not, to substitute for one course of surgery a course of military hygiene which they may have gone through either at Edinburgh or Dublin, if they choose. Do you think that is a good arrangement or not ?—For any special knowledge as to military hygiene, I should think that a military hospital would be better than one of the civil hospitals in the metropolis.

517. The result is this, that young men who have been studying in London come up without having gone through a course of military hygiene, whereas those who have been studying at Edinburgh or Dublin have attended that course, so that the conditions of admission are different to the different students. Do you think that there is a disadvantage in that ?—I have always thought that a course of military hygiene, which must include some special matters connected with the military profession, would be much better pursued in a military hospital than in any of our hospitals in London ; of course the same observation applies to Edinburgh and Dublin.

518. In addition to the conditions that are required, there is an examination at the army medical department ?—I believe so.

519. Do you think that it would be advantageous to have that examination by a Board specially appointed, and who should examine for the navy and for the East India Company ; likewise an independent body of examiners?—I think it would be better to be an independent body of examiners, unless you take, so far as they are worth, the examinations of the existing colleges.

520. As another examination is required, and this examination requires speciality on the part of the examiners, would a person in the habit of examining be a better examiner than a person appointed for the purpose at the moment?—There is a great art in examining ; and the first thing, so far as I have seen, towards a good examination is to get a good examiner. A man practised in examining must be a better examiner than one who is not practised.

521. So far, a board habitually examining would be better examiners than men appointed for the moment in any one department ?—I think so. At our College of Surgeons I do not think any one becomes a very good examiner under two or three years.

522. (*Sir James Clark.*) Do you not think that there are certain professional subjects, such as physiology and pathology, that require a man always in the habit of teaching to conduct an examination ?—I think that teachers altogether are the best examiners. They know most about the pupils. It is difficult to get good examiners who have not been teachers. A man conversant with teaching and knowing the habits of pupils generally makes out in a quarter of an hour what a man is worth. If he is not so conversant, it takes him a long time to do so.

523. (*President.*) You would prefer, would you not, a good general examination, trusting to subsequent experience, to learn the specialities of military surgery ?—Yes. I suppose as there are some peculiarities belonging to military hygiene it would be an advantage to have a military element in it, somebody conversant with military surgery.

524. That would depend, would it not, upon whether there existed means out of a military hospital for acquiring it before ?—Of course.

525. Are the Commissioners to understand that you think it is better that you should ascertain the general qualifications of a candidate for admission before you admit him, trusting to subsequent teaching to give him the specialities of military hygiene ?—Yes, I think so.

526. Will you go farther, and say that you should have a test, not only in medical and surgical knowledge, but in general education ?—I think this would be the principal thing, if you can attain it. If you can get young men, who have been previously well educated, and who have acquired habits of study, you may dispense with a great deal of what you require in these papers. A young man entering the profession, who has acquired the habit of attention and study, will generally make everything out for himself better than others will make it out for him.

527. Have you any practice of that kind at the college ?—We have with regard to our fellows. The fellows of the college are not admitted until they are twenty-five years of age, which gives ample time for education. They are required to have at least five years of study in the profession, and six years if they have not a university degree. If they have a bachelor of arts degree we require no further examination or testimony as to their general education, but if they have not a bachelor of arts degree they are required to go through an examination by certain examiners whom we appoint for the purpose.

528. Are these examiners university men ?—Yes; Mr. Smith, of Oxford, and Mr. Stokes, of Cambridge.

529. You get an equivalent examination to a bachelor of arts degree from them ?—Yes, we do so. We require it of the fellows of the college, and we also recommend it to those who only become members.

530. (*Sir James Clark.*) Would it not be better that every student, before he is registered as a medical student, should pass an examination touching his knowledge in science instead of having it done later ?—Certainly ; we advise our young men to come up for an examination before they begin their medical studies ; for if they come up afterwards they are very apt to pass their examinations by getting crammed for the purpose. Indeed a man with a good memory may pass almost any examination with very little knowledge.

531. (*President.*) When first you established that rule for the fellows did you find that there was a difficulty in getting young men to undergo that ex-

amination?—Yes; they did not expect it. We gave notice some three or four years before. but they did not expect it to be so much as it was, and we were forced to lower the standard of examination, and we have not got it quite up to the original standard yet. It did not work well at first, but it works very well now.

532. The fact is, that if you make a change in the examination it is some time before you get the public to adapt themselves to it?—Yes.

533. If you give them time there is hardly anything that they will not do?—Certainly. In the course of time we hope to have no young men coming up not thoroughly well educated.

534. In the case of the army would you think that it was a wise thing or not to have a second examination, either upon promotion or at some period after his admission into the army, with a view to enforce a certain amount of study upon a young man at the time that there is a great temptation to idleness?—Yes, probably this would be right to prevent them getting rusty.

535. When a young man goes into a profession, in which he has not the stimulus of a fortune to be made by private practice, but is sure of his rank after a certain number of years, he may pay much less attention to the study of his profession, and it would be wise in that case to have a second examination?—Yes.

536. As in the case of the navy, where the officers go through an examination upon promotion?—Yes, I believe naval surgeons now are sent to our college for a second examination before they are promoted; at least they were so while I was an examiner some years ago.

537. (*Sir James Clark.*) Will you state the subjects upon which the fellows are examined?—Greek and Latin, and geometry and algebra up to a certain point, and one modern language.

538. (*President.*) Do you make a preference as to the foreign language?—We prefer French.

539. (*Sir James Clark.*) If a candidate could show that he had attended to these things before, you would not examine him upon them again. If he could show, for instance, that he had been a bachelor of arts?—If he is a bachelor of arts of any English university, or of Dublin, we do not require any further examination in arts.

540. But if he has received any education less than that you examine him?—Yes; we limit it to these universities. If there were any equally good educational test we should adopt it.

541. (*Sir Thomas Phillips.*) Would you recommend it as desirable that a person, who you think ought to be examined at some period of his professional career, should also, with reference to that examination, be required to attend hospital practice for any period of time?—I think it would be a very good thing if before promotion you were to give him leave of absence for six months to attend a metropolitan hospital. I believe that that is done with respect to the navy; at least it used to be so.

542. (*President.*) You have seen a great deal of students, you know the destination to which they are going, and you have a general knowledge of the advantages conferred by the army medical profession, should you say that the pay, the rank, the emoluments, and the general position of an army medical officer are such as to attract the best students to the army medical profession, or a fair share of them?—I can only say that I do not believe that I have ever recommended any of our better class of students at St. George's Hospital to go into the army, except into the Guards, where they have some advantages which they do not possess elsewhere. I do not think that there is anything in the army, as it now exists, to remunerate the best educated class of students.

543. And that applies still more to the navy, does it not?—Yes; the situation in the navy is in some respects more disagreeable.

544. (*Mr. Stafford.*) Is it then merely a question of remuneration?—I think that is one thing, and a very important thing. I also think that rank and station are very important. Formerly they never gave the Order of the Bath to a medical officer.

545. (*President.*) There are a good many inconveniencies, are there not, to which medical officers are subject in the army which might be remedied?—Yes; if a young man goes as an assistant surgeon into a Light Dragoon Regiment in which there is an expensive dress, and an expensive mess, his pay will not half meet his expenses.

546. His payment to the mess is compulsory, is it not?—I do not know; the inducements altogether are quite insufficient to get the best students.

547. (*President*) In a service in which the promotion goes entirely by seniority, does not that offer less promise to a young man who is ambitious than one in which promotion would go by selection on account of merit?—Yes; there is no stimulus to exertion where it is merely by seniority.

548. Should you not say that, supposing there were no difficulties in the way of promotion by selection, a service conducted on that principle would be more attractive to young men of talents and ambition?—Yes, care being taken in making the selection.

549. (*Mr. Stafford.*) Do your impressions of the army medical department result from any communications made to you from young men who have entered it?—I have seen a great many young men who have been in the army and navy too; I did not recommend them, but a certain number went into these services.

550. They expressed regret subsequently?—They were very often dissatisfied.

551. That they had not pursued another course?—Yes, many were.

552. From your communications with them, you probably draw your conclusion as to the whole matter?—Yes, and also from knowing what they get there, and what they may get elsewhere.

553. You consider that those disadvantages are not counterbalanced by other advantages?—I do not know that they are so.

554. (*President.*) Though the element of certainty, with small emoluments, will attract men to a great degree?—I have no doubt that the element of certainty is so important that a moderate addition, so far as pay went, would be sufficient.

555. Does not the element of certainty operate very much more upon men in middle life, than upon very young men?—Perhaps it does.

556. The prospect of rising by merit rapidly would operate more upon a young man than the certainty upon an old one?—I suppose that would be the effect.

557. Do you think, from your acquaintance with young medical men in all the hospitals, that it would be possible for a person examining them to come to a sound conclusion generally upon their merits?—Yes; I think that a person properly qualified would soon know what they are worth.

558. Could you do it by a reference to their case books?—Not by merely making them take all the cases; but I think that if a young man were required to give his notes of a certain number of cases, and to add to them commentaries explaining his reasons for forming such or such a diagnosis, or employing such or such treatment, that those papers would give a very complete knowledge as to what that young man is worth.

559. Prizes are given now, are they not, for notes of cases which are sent in without the names, with a motto attached, to be examined with a view to the distribution of the prizes?—I give an annual prize at St. George's hospital, for the best notes of twelve cases with commentaries attached to them, and I believe that all those who get that prize are deserving young men.

560. You think that is a better test than an essay written upon some medical subject?—Yes; an essay may be taken from books, or somebody may write it for the competitor; but one person cannot make much

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of another person's notes, and much less of his thoughts and reasonings upon them.

561. You think that that is the soundest way of doing it?—Much so. I have no faith in essays.

561.* Can any one form a just estimate of the value of notes of cases with commentaries annexed to them, who has not himself seen the cases from which the notes were taken?—A competent examiner, who forms his opinion by referring, not to books, but to his own experience, cannot have the smallest difficulty in doing so. If notes are taken in a slovenly manner, or manufactured for the occasion, there will necessarily be omissions and discrepancies, which a well-informed examiner will at once detect; at the same time, that as to the commentaries, he will easily determine whether the facts which have been stated do or do not warrant the conclusions which have been drawn from them. At the College of Surgeons, since the higher examination for the fellowship was instituted, this method of testing the qualifications of candidates by requiring them to produce a given number of cases with commentaries annexed to them, has been always adopted. While I was an examiner it seemed to me to answer the purpose perfectly well; and since I resigned my office as an examiner, I have never heard that there was any other opinion on the subject. Yet, in this instance, it can be only by the merest accident that those who inspect the papers can have seen any of the cases which are described.

562 Would a few prizes, either of medals or small annuities to be held for a certain period, give a stimulus to young men in the profession, if offered on the conditions which you have stated?—I believe that to be the only kind of prize worth anything.

563. With regard to the mode of distributing the duties in the army hospitals, do you think that it operates at all to the discouragement or to the encouragement of medical and surgical study in young men. It is stated in the Report of Mr. Cumming and Mr. Maxwell, on hospitals in the East:—"The supply of medical attendance, if it were judged by a "single comparison of the number of medical officers "of all ranks on duty with the number of patients, "would appear larger than it is practically, because "the duties of the higher ranks of the service are "almost wholly foreign to the professional treatment "of sick or wounded. The duties of the inspector "general and of the deputy inspectors are altogether "administrative; the former is the governor of the "hospitals, the latter assist him in the work of general "superintendence and control. The sick and wounded "are treated by second class staff surgeons and assistant surgeons, to each of whom wards are assigned." Is that a good practice or a bad one?—I understand from that, that the senior medical officers are not employed in the treatment of patients.

564. Though not employed so directly, they give, I believe, a general supervision; will you describe the practice in a civil hospital?—At St. George's hospital, where I was surgeon for thirty-two years, I managed the patients at the end just as I did when I began. I had just the same duties. The only difference in a civil hospital is that a surgeon who has had a long experience, ought to know his duty better, and to treat patients better.

565. Would it not have interfered very much with your higher class of duties, both scientific and medical, if you had been called upon to perform what are called administrative duties, to look after the arrangements of the hospital, to write requisitions for things required, which is what your house steward does as a matter of course?—I could not have done it. All that is done by other persons in civil hospitals.

566. Your time and knowledge are too valuable, are they not, to be spent in that way?—Yes.

567. You ought not to put upon a man who has acquired valuable medical experience duties which can be performed by others?—You had better keep all his experience for his own special purposes; these are not medical employments.

568. That is the rule which you would lay down, that no medical officer should be employed in anything but medical employments, and that everything necessary for the sick ought to be supplied to his hand?—Yes; and whatever the medical officer required should be done, and there should not be any disputing with him about it. You should take care to have a proper person, and then trust him altogether.

569. With regard to such things as alterations in a hospital for the benefit of the sick, you could not put that in a public department at the option of a medical officer?—That is a medical question very much; he should give his opinion upon it.

570. In a civil hospital I suppose it is the governors who decide upon such points?—Yes; a committee of governors.

571. Therefore you would require some person to receive the report of the medical officer and to act upon it?—If any alteration is made in our hospital the medical officers cannot make the alteration, but the committee always listen to their opinion so far as that opinion goes.

572. Then it becomes really a financial question, does it not?—Very much so.

573. (*Sir James Clark.*) Do you think a committee the best government of a hospital?—I think it is much the best. Our government by a committee here is a great deal better than the public functionaries in Paris. The medical officers in the hospitals there complain very much of the insufficient diet and the little attention that is paid to them; whereas the committee of our hospital never refuse anything that is wanted. The fact is, that a committee of gentlemen will be much more liberal than a Government officer.

574. (*Sir H. K. Storks.*) They are disposing of different funds. The committee in London are disposing of voluntary contributions, and the other has the disposal of funds raised by taxation?—Just so.

575. (*President.*) You have stated that you thought that prizes would act as a stimulus?—Yes.

576. Would it be worth while, for the purpose of attracting the best students, to give any prize for superiority at the first examination?—I have much doubt myself about giving competitive prizes in examinations. It may work very well in schools and colleges, but when you come to professional examinations (I do not speak about the civil service), I do not think that competitive prizes will answer; for, after all, they will be obtained chiefly by those who are crammed by the men of good memories, and not by the men who really work.

577. Though memory is no very great matter, yet no man can be efficient who has not a good memory?—No; but then he may use his memory for different purposes.

578. Still, even cramming for an examination is a test of a very important point, namely, the power of memory?—Yes, it is; but what I mean to say is this, that, if you have a competitive examination, a man who has a very good memory, and, therefore, who has one great element in genius, will have the advantage over a man who, perhaps, with an equal memory spends more time in observing and thinking for himself. It seems to me that a man who thinks will not have the advantage which he ought to have.

579. Therefore, you would limit it to prizes in some shape, such as medals or scholarships given to the junior branches of the profession after they are in it?—I would limit it to one class of prizes.

580. Founded upon cases?—Yes; I believe that the ordinary prizes do very little good. For some years past the teachers in the London medical schools, following the example of University College and King's College, have been in the habit of giving prizes to the students, yet, notwithstanding this, they are found to be not so well qualified for examination at the College of Surgeons now as they were twenty years ago, and the hospital surgeons and teachers are, I believe, all satisfied that those prizes do no good;

nay, more than that, that the best men do not get them.

581. You want, do you not, to keep the education more general in the early part of a man's life, and not let him learn the specialities of the profession to the exclusion of general subjects?—Yes; these prizes operate in this manner: A man wants a prize in chemistry, or physiology, or something else. He gets books, reads up his subject, and this kind of work keeps him out of the dissecting room and wards of the hospital, yet these are the only places in which he can get any knowledge that he can apply to practice, and learn to observe and think.

582. In after life, when he is in the army, would it be an advantage then to give prizes, but not for essays?—I have not considered that question enough to give any positive opinion about it.

583. You do it yourself, do you not?—If you can find any means of ascertaining that a medical officer of the army is continuing to improve himself, it would be very well to reward him.

584. But you ought to give some stimulus to encourage him to do so?—Yes.

585. By prizes, or by promotion?—Yes; promotion being the best prize.

586. (*Sir Thomas Phillips*). With regard to the encouragement of candidates, would you rather depend upon rewards by pay and proper treatment afterwards for the introduction of the best class of men into the profession, than upon special prizes?—Yes; for success in his profession is the greatest prize that a man can have.

587. Pay or reward, whatever else will attract, will attract good men?—If success is not a sufficient prize he can be good for nothing.

588. (*President.*) Pay and rank will attract good men to the profession, but they will not continue good men unless they rise by passing over the heads of the slow ones by promotion?—Certainly. I think that the system of promotion merely by seniority is open to very great objections.

589. Although the other is difficult?—It requires care, no doubt.

590. (*Mr. Martin.*) Do you consider that any person can be led to the highest excellence by pay only; or do you recommend that other inducements ought to be held out?—There are many other considerations, but pay is one.

591. (*Mr. Stafford.*) Will you name some of them?—Rank or station. The not giving the Order of the Bath to medical officers, among whom there are as deserving, and, in fact, as brave, men as among any others, has had a very ill effect upon the medical military service. They considered themselves as put in an inferior grade while they felt that for the most part their attainments were really greater.

592. (*Mr. Martin.*) Referring generally to the requirements of an army surgeon, should you say from all that you have seen, that for one soldier who dies for the want of a delicate surgical operation, hundreds perish for want of attention to the sanitary requirements of the army?—I have not had experience enough of the army service to give much opinion upon that point.

593. Speaking generally from what you have heard, what should you say?—I suppose much more depends upon attention to the sanitary requirements; that is, to prevention, rather than to cure.

594. (*President.*) Are you aware that in the army every recruit is a picked life, and that the soldier is in your hands generally from the age of eighteen to thirty?—Yes.

595. And yet the mortality of the army is double that of the mortality of persons in civil life in London?—Yes, I am aware that in the barracks in Portman Square there used to be a greater mortality than in all the neighbouring districts.

596. That district is the healthiest, as to the barracks, is it not?—Yes.

597. Does not that show that there must be some insufficiency in the conditions of a soldier's life, either in food, clothing, or his barrack accommodation, or in the habits generated by the service?—Yes, something. I suppose it is a combination of various causes.

598. Is it not much to be attributed to night duty?—No doubt. Exposure to the weather is one cause.

599. But the night duty of the police is considerably greater, and their mortality is not anything like so large?—I do not know.

600. (*Mr. Martin.*) You would therefore consider the preliminary sanitary training, of which you have spoken, in a military hospital, an essential requirement for a young army surgeon?—I think it would be a very proper thing indeed, that after having passed his first examination, and it being proved that he had got all that he could get in other ways, he should pass his time in a military hospital to learn the specialities belonging to the military profession. I do not think that any professorship set up here or in Edinburgh or in Dublin, will answer at all the same purpose.

601. You think that subject to be so important that it ought not to be left to the future contingencies of the service, or the hap-hazard opportunities that an officer may have of acquiring it afterwards?—Certainly.

602. (*Mr. Stafford.*) Have the cases of young men who have entered the military medical department, and subsequently abandoned it for the civil professions, come under your notice at all?—I have not made that any special subject of inquiry.

603. But have they ever come under your notice?—I have known many who have entered the medical military service and have left it. In fact, the chances of obtaining an income in private practice are so much greater, that in spite of the certainty of the military medical profession, a great many leave it.

604. Do you think they stand as fair a chance then as if the years that they had spent in the army medical department had been spent in civil life, or is there any disadvantage?—For the most part, it is a disadvantage to have been employed merely in the public service.

605. (*President.*) They would have seen a less variety of practice, would they not?—Yes; private practice is peculiar. If you are in the army, and have at the same time an opportunity of seeing private practice, it is another thing; but if you serve with a regiment abroad, the man who engages afterwards in private practice must be very much at a loss.

606. (*Mr. Martin.*) Do not you think that the absence of those active competitions which exist in civil life tends to disqualify an army surgeon from entering into that field of competition?—Yes, it does.

607. (*Sir H. K. Storks.*) Do not you think that the life to which a young man is introduced in a regiment is very likely to divert him from the pursuit of his profession?—I should think so, indeed.

608. It would be desirable, would it not, to keep him away from that if possible?—Yes; unless you could lift the young men with whom he associates up to a different standard.

609. (*President.*) In a fashionable cavalry regiment, for instance?—I should think it is a bad education for a young medical man.

610. That is one reason, is it not, for applying artificial stimulants to excite him to study?—Yes.

611. (*Sir Thomas Phillips.*) By the present conditions a candidate who has a diploma from the royal college of surgeons of England may be admitted as a competitor for service in the army?—Yes.

612. As an army surgeon deals largely with medical practice, should it not also be a condition that he should present a certificate or a diploma from some medical body?—Certainly.

613. From the Apothecaries' Hall or the College of Physicians?—Yes; the College of Physicians would be a very fit place, but there is no opportunity of passing that examination at the College of Physicians at present.

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614. Until an opportunity could be afforded him to become a licentiate in physic, it would be, in your judgment, essential that he should present a certificate from Apothecaries' Hall?—That he should present a certificate showing that he had the necessary medical knowledge. I do not know that it should be exclusively from Apothecaries' Hall.

615. But from some body that would ascertain that he was conversant with the practice of medicine?—Certainly.

616. Supposing him to be admitted by a board, as has been suggested, you say that he ought to be sent for promotion to some general military hospital?—Not for promotion, but to learn the specialities belonging to the military service.

617. And would it not be desirable, in order to observe his moral qualities and his character for trust and confidence in after life?—It would so far be beneficial to the service.

618. With regard to operative surgery, may it not happen, after a long peace, supposing war to occur, that a large proportion of the army surgeons would be men who could not be familiar with operative surgery?—Yes; they would not be very familiar with it.

619. In all probability that would be so, would not it?—Probably.

620. Is that, in your judgment, an evil?—Certainly. I was asked a question before, whether it would not be well for them to come and refresh their memory at a civil hospital to prevent them becoming rusty. I think that my answer to that question applies to this.

621. You think, do you not, that by that means the inconvenience would be remedied so far as it can be remedied?—I think so.

622. Does no other means suggest itself to you?—No; I do not see that there could be much difficulty in doing what has been suggested.

623. (*President.*) You are, I think, of opinion that we may alter the examinations so as to secure the best men if we can get them, but that we shall do nothing unless we so improve the status and the pay of the medical officers as to attract a better class to the examinations?—If you want to get a better class of students you must give them a proper reward for entering the army. You may get as many men as you like, but what they are will depend upon what you give them.

624. You think that now we do not attract our share of the best?—Certainly not.

The witness withdrew.

William Fergusson, Esq., F.R.S., examined.

W. Fergusson, Esq., F.R.S.

625. (*President.*) You have heard Sir Benjamin Brodie's examination, have you not?—Yes.

626. Do you generally accord with his views upon the subject of the first introduction into the profession?—I did not hear that part of it.

627. His view is this, that we should not require an acquaintance with special military hygiene from a candidate, or that he should have gone through a course of it before he comes for examination, but that we should test his professional qualifications, and that after he has entered the army service special teaching should be given him in a military hospital; do you agree with him?—I quite take that view.

628. Further, that we should not only require an ordinary knowledge of medical and surgical subjects, but that, supposing we made the profession sufficiently advantageous, we should get some test of general education besides that which is purely medical and surgical?—That would certainly be a great advantage.

629. (*Sir James Clark.*) Do you not think that establishing a class of military surgery at a school is rather injurious than beneficial?—I think that it has been very injurious, as it has been heretofore done in this country.

630. It takes up much of a young man's time that might be better employed, does it not?—Yes. I refer to the system at Edinburgh.

631. (*President.*) Practically has that course been pursued to the exclusion of other important matters?—To a certain extent it has; it is admitted in Edinburgh that it is equivalent to a course of ordinary surgery, but I think that a young man would have been better attending a course of ordinary surgery, getting that special knowledge afterwards.

632. It frequently happens, does it not, that a man does not decide what service he will enter till he has finished his education?—Yes, in that way he gets an independent course of education; independent as to military matters, and independent as to ordinary surgery.

633. (*Mr. Martin.*) But you hold that subsequent instruction in sanitary science is essentially requisite to an army surgeon?—Yes.

634. So much so as to be indispensable?—I should say that it is indispensable before a young man is put into full action.

635. (*Sir James Clark.*) Would you consider it an advantage to have a second examination before an assistant-surgeon was promoted to be a surgeon, after being two or three years in the service, in order to test him as to his knowledge of his special duties, and his general professional information?—Yes, I think that would be very advantageous indeed; it would keep a young man to his studies, and you would have a better style of man afterwards.

636. (*Mr. Martin.*) Do not you consider that it would be a great advantage to give facilities to medical officers on their return from our foreign possessions, to have recourse to civil instructions in our great cities, in order to renovate and improve their medical and surgical knowledge?—Yes, it would be a great advantage that that should be encouraged to the utmost. Already in my experience, men coming from abroad, have in considerable numbers gone to schools, and I think if there was greater encouragement given to this practice, and if it were made peremptory it would be highly advantageous.

637. You would have it imperative and not permissive?—Yes.

638. (*President.*) Would you make it imperative upon all?—I think it would be a great advantage.

639. You would not trust to its being used as an element in the consideration of promotion?—You mean if one attended and another did not.

640. Yes; that that should be considered?—I should say that the one who attended would be in all probability the best man; it would show a higher class of mind, and he would assuredly have more knowledge than the other.

641. (*Mr. Martin.*) Referring to what you have seen of the condition of medical officers in the army, should you expect that a body of men like them could be led to the highest point of excellence by money recompence, or that something else should be superadded?—I think that something else should be superadded in all deserving cases.

642. (*Sir Thomas Phillips.*) Do the present inducements to enter the army medical department tempt the best class of men or a fair proportion of the best class of men to enter the service?—No, that is not my experience; although some first-rate men do enter the army medical department every now and then, I should say that, as a rule, the better men do not.

643. Do you regard that as originating in the insufficiency of the motives that are held out by pay and rewards for good conduct, and various other elements?—Yes, there is not sufficient inducement.

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644. Do you advise the best men to enter the military or naval medical service?—Not just now, because the inducements are not sufficient.

645. If greater inducements were held out, do you not think that good men would enter?—Yes, undoubtedly they would; they would be advised to do so by their friends and those who are judges.

646. (*President.*) Do you think that a system in which a great deal of drudgery and labour as to the supply of the hospitals is thrown upon the senior medical man is a wholesome one?—I think that it is very objectionable indeed. It seems to be converting a medical man into a clerk.

647. It is stated in the report on the state of the hospitals in the East, that "the supply of such articles "in the wards is in practice thrown, in these esta- "blishments, on the medical officers in charge of "wards, whose requisitions, as we have already "noticed, need the counter-signature of the staff "surgeon of the division. We think that this duty "should not be cast upon the medical officers. It is, "in our opinion, an evil that the wards of a hospital "are not furnished with their periodical supply of "sheets, shirts, and even of fuel or candles, or obtain "their full complements of bedsteads, bedding, and "other articles of furniture, without a formality which "encroaches upon the time and interferes with the "legitimate duties of medical men." Do you agree with that?—Quite so; I think that other people should take charge of it. I think that a medical officer ought to have the privilege of complaining when he sees anything wrong, and that the greatest attention should be paid to him.

648. And of ordering anything additional, in reason?—Yes.

649. The check being, not that the person whose business is to supply should refuse, but that the question should be referred to some higher authority?—Yes.

650. (*Mr. Alexander.*) Whatever you conceive to be necessary for a patient, you consider should be immediately supplied?—Yes; if a medical man orders it, it ought to be supplied, and he should have the smallest trouble in getting it.

651. (*President.*) So with regard to the diet, you would not trust to those things which are called comforts of a patient being ordered as extras; you would think that the general kitchen of a hospital ought to produce all that would be useful for a patient, and that only expensive things should be deemed extras?—Yes.

652. (*Mr. Alexander.*) You would have whatever you ordered issued?—Yes; and that the medical man should have it without being annoyed in any way; that he should just give an expression of his professional opinion, that it was needful for the patient, and that he should be in no way insecure.

653. (*Mr. Martin.*) You think that the thing should always be done?—Yes.

654. (*Mr. Alexander.*) And the same as to diet and bedding?—Yes.

655. (*Sir H. K. Storks.*) That is irrespective of his own chief, if he were a subordinate medical officer?—If he has the responsibility, I do not think that his chief has anything to do with it. I speak of a person who is responsible, and who is prescribing and taking charge of a patient.

656. (*President.*) Is not a medical officer who is actually treating a patient a better judge of what the patient wants than the person who merely supervises?—Yes, undoubtedly.

657. (*Mr. Martin.*) You consider that a regimental surgeon is one of the most important officers in the army?—Undoubtedly.

658. More so than a mere administrative officer?—Yes, I should say so.

659. Do you think that any special reward or encouragement should be given to a proved good regimental surgeon, in the way of brevet rank, or in any other way?—Yes; I think that he is as justly entitled to reward as any officers in Her Majesty's service.

660. Would you desire to have chairs established in some military hospital?—Yes; attached to some great institution. Lectures should be given in the schools that might be peculiar to the army medical department.

661. (*Sir Thomas Phillips.*) There are no means, are there, of teaching sanitary science even to civil practitioners?—There is no chair devoted specially to that.

662. (*Mr. Alexander.*) Do not you think with a museum, model rooms, and the treatment of several hundreds of patients, young men, at a large hospital like Netley, will derive great advantage, from attending the clinical lectures?—Yes, most undoubtedly. I have frequently heard suggestions as to the propriety of making a great collection, such as that at Fort Pitt, more available than it seems to be at the present time, associated with some large hospital of greater dimensions altogether than even Fort Pitt, that it might be made useful to young men about to join the army medical service.

663. (*President.*) Could it be made available for accidental cases; the great majority of cases in that hospital were only chronic cases, and not acute cases?—It would be better both ways. You must just take such cases as you can; many of those cases may become acute after all.

664. Where you have a hospital in which men come from abroad, their cases have been acute, but they have become chronic?—Yes.

665. (*Mr. Martin.*) You have to deal with the sequel of acute disease?—Yes; you cannot help that, but those who have seen the acute forms of such diseases will in all probability be attached to these hospitals as seniors, and they will explain to the young men the original features of the diseases, and the young men will be able to recognize such cases when they practise themselves.

666. (*Mr. Alexander.*) There you have an opportunity of studying pathology?—Yes, more so than at any other.

667. And also operative surgery?—Yes.

668. And stethoscopic observations?—Yes, and a very great addition to a man's professional information may be acquired at such institutions, if properly founded.

The witness withdrew.

J. Paget, Esq., F.R.S.

James Paget, Esq., F.R.S., examined.

669. (*Sir James Clark.*) You are an assistant-surgeon of St. Bartholomew's Hospital, are you not?—Yes.

670. And lecturer on physiology?—Yes.

671. And one of the examiners appointed by the Board of Control to examine medical candidates for the East India Company's Service?—Yes.

672. How long have you held that appointment?—Nearly two years and a half.

673. How many examinations have taken place in that time?—Five.

674. How many examiners are there, and what are the subjects of examination?—There are four examiners, and the subjects of examination are anatomy, physiology, including comparative anatomy, medicine, surgery, and natural history.

675. How do you conduct your examinations?—We conduct our examinations partly in writing, that is with answers to written questions, and partly also *vivâ voce*.

676. (*President.*) Do the questions vary at each examination?—Each examiner sets his own questions on his own subject at each examination. They are conducted partly by answer to written questions, partly orally, partly by the examination of patients,

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and writing reports of their cases, and partly by operations on a dead body, and by the application of bandages and apparatus.

677. (*Sir James Clark.*) How much time do you require to conduct the whole examination,—how many days?—It requires three complete days and two half days.

678. It takes a week altogether, does it not?—Yes.

679. It takes you a week to be prepared to decide finally?—It takes the examiners more than a week, but the candidates are occupied for five days.

680. On what subject are the candidates most frequently deficient?—I can only answer that from general conversation among the examiners. I should say that there is no subject in which they are specially deficient, except in natural history; some are deficient in one subject, and some in another; the only general deficiency is in natural history.

681. Have you not found the preliminary education of medical men deficient in literature and science?—With regard to preliminary education in science, they give no sign of it at all; generally, all their science is acquired at the medical schools.

682. (*President.*) Do you examine in general knowledge?—Not at all; we only judge of that by the papers written.

683. (*Sir James Clark.*) Which you often find very badly written, do you not?—Sometimes they are.

684. (*President.*) Have you raised the standard as to general acquirements since the commencement of your examinations?—The examiners have no control over the examination into the general acquirements of candidates.

685. On medical points has the examination become higher?—I think it is about the same, but I should say that the qualifications of the candidates have increased.

686. (*Sir James Clark.*) Should there not be a special examination of a student before he is registered as a medical student?—I should think that it would bring a higher class of students to the profession.

687. Is it your opinion that a practical examination in dissections, operations on the dead body, and the examination of diseases, is requisite before a man should be allowed to pass?—I think there should be some such examination before any diploma is given.

688. (*Mr. Martin.*) Especially as to tropical diseases?—The difficulty would be to find a student who had seen tropical diseases at all.

689. Except in the "Dreadnought," and such hospitals?—Yes; but there is no opportunity for the general body of students to study them.

690. Do you require that students should have informed themselves by study upon such subjects?—The examination only goes so far as a student may learn in the general course of instruction.

691. (*President.*) What means have they of subsequently acquiring a knowledge of military medical treatment?—That is left entirely to the regulations of the Company. I have always understood that there is a period in which they study specially for the Company's service after obtaining their commissions.

692. (*Sir James Clark.*) Are you of opinion that the examinations may be made the means of improving the course of instruction at the medical schools?—I do not know that they have had any effect upon the general course of instruction; but, as for the candidates for examination, they have had a very important effect.

693. You have stated that the last examination was very much superior to those which you had at first?—Yes; and I know that it has become customary with those who intend to compete at the East India Company's examinations, to continue their studies for three or six months after obtaining their diplomas, and that with special reference to their examination.

694. You are of opinion that the result of the East India Company's examination has improved the character of medical men?—Yes, of those who intend to be candidates.

695. (*President.*) Except so far as you consider their study for the examination to be a mere cram?—I know that it is better than that. For example, a student will go through one or two courses of operative surgery on the dead body on purpose for the examination, and I chance to know, that for their ordinary work in answering questions, the course of study which many of them go through is much better than a mere cram.

696. Do you contemplate altering the standard at all, or the nature of the examination by extending it or otherwise?—No; I think that the probability is that it will remain on its present plan.

697. Have you within the competitive examination a fixed standard, which if a young man did not reach he would not get the vacancy though there was none better?—Yes; in one of the examinations the whole number of vacancies was not filled, because some of the candidates in the opinion of the examiners were not fit for the service.

698. (*Sir James Clark.*) What is your opinion of a course of military surgery being taught at the schools?—I think that it would be useless. I think there could be nothing taught, nothing really useful, in London. Students can learn nothing from such lectures, except in the presence of the things spoken of.

699. Therefore, a course of military surgery would be a sham, would it not?—It would be quite useless, and mischievous by distracting the attention.

700. (*Mr. Martin.*) That objection would not hold against instruction in sanitary science at a military hospital?—Not at all; and military surgery I think should be taught there. I accord with what was said before, that every student after obtaining his diploma should have some special education for the military service before entering upon its duties.

701. (*Sir James Clark.*) Would it be well to have a second examination of the assistant-surgeon before he is promoted?—I could not well answer that question, without knowing more of the special duties of an assistant-surgeon as distinguished from those of a full surgeon; as to ordinary hospital practice here, an assistant-surgeon is presumed to be fit to be made a full surgeon when his time comes.

702. (*Sir Thomas Phillips.*) With the view of ascertaining that a man who has been in practice as a military assistant-surgeon for some years has availed himself of opportunities for improvement, you think it is desirable that there should be some examination at a subsequent period of his career?—I cannot speak upon that; I cannot say that it would or would not be desirable from any knowledge of my own.

703. (*President.*) Do you not think that it would be desirable not as a question to ascertain his actual fitness for the rank of surgeon, but as an encouragement to a young man placed in circumstances of great temptation to idleness to pursue a certain course of medical study?—In that view I think it would be of great value.

704. (*Sir Thomas Phillips.*) Having regard to the great advantages of civil practice as compared probably with the more limited practice that he was conversant with, would it not be advisable that before the second examination he should study at some of our hospitals?—The study of seniors at a civil hospital is very limited: those who come there after some years of practice cannot be brought into the general routine of hospital study again; they never become students again.

705. At a military hospital do you think that desirable?—I do.

706. (*Mr. Martin.*) Do not you think that facilities ought to be afforded to medical officers when they return home to re-enter the schools in civil life, and so improve their knowledge?—Certainly; and it is quite usual for them to do so.

707. Do you think that that ought to be permissive, or that it should be rendered imperative in the public service?—I think it might be of great value if rendered imperative.

708. (*Sir Thomas Phillips.*) If the examination tested the qualifications of a man before promotion, the mode by which he would attain competency

would be of less importance than the fact that he had become qualified ?—Yes, certainly.

709. Will you state to the Commissioners the relative number of the candidates and the vacancies during examinations for the East India Company's medical service?—In one of the examinations I know the number of candidates was inferior to the number of vacancies. Dr. Parkes has a list, and in the first examination it appears that there were twenty-eight candidates for twenty-two appointments.

710. Did you fill up the whole of the appointments? Yes.

711. In the second there were fifty-five candidates for more than forty-two appointments?—They were not all filled up. We considered that of those fifty-five candidates there were thirteen not fit for the service at all.

712. Only giving you forty-two persons qualified?—Yes ; in the next examination there were thirty-seven candidates for thirty-seven appointments, and those were filled. In the next examination there were thirty-eight candidates for thirty appointments, and those were filled. In the next there were forty-six candidates for twenty-two appointments.

713. It would seem that in the progress of the examinations the candidates have increased relatively to the appointments ?—Yes.

714. It has not apparently had the effect of discouraging candidates, but rather of encouraging them? —Yes, just so ; but I think that the number of candidates for appointments would not be an exact reckoning ; many would work for appointments, but they would find out before the examination that they were not likely to get them.

715. The inducements to enter the East India Company's Medical Service are very much beyond those offered by the army, are they not ?—Yes.

716. In your judgment, are the motives offered to men of good ability and qualifications to enter the army adequate ?—I presume there is a want of motive. I think I could say that, except in the instance of those who have a military connexion, the best students very rarely enter the army medical service.

717. You mentioned that many were deficient in natural history mainly. Do you include in that comparative anatomy ?—Yes, and botany.

718. Those are the subjects to which you referred ? —Yes.

719. Not the more general topics of natural history?—I think I might say the topics of natural history in any department.

720. You have stated that one mode of testing their qualifications is by requiring them to practically examine patients?—We have a certain number of patients whom they have to examine, and each candidate examines one medical and one surgical case, and writes his report on them, with his decision as to the nature of the disease, and the course of treatment that he would adopt.

721. Are the cases selected by you or by him?—They are selected by the examiners.

722. Are they in one hospital?—The cases are generally cases of persons who can move about, and they are taken to the India House and examined there. The medical cases were examined in University College on the last occasion.

723. Has the selection of the disease been with reference to any particular probable duties in after life, or to ascertain their general knowledge?—The intention of the examination has been entirely retrospective, so as to ascertain what the student has learned in the usual course of study.

724. (*Sir James Clark.*) Have they not two or three cases?—Generally, each candidate examines one medical and one surgical case. We have a sufficient supply of cases to distribute among them, and generally there are some four, five, or six surgical cases to distribute ; the candidates do not all examine the same case.

725. They only examine one surgical case each?—One or two medical and one surgical.

726. (*Sir Thomas Phillips.*) But the one case may be the case of eight or ten of the candidates?—That depends upon the number. With forty candidates we should have not less than six cases of each kind.

727. (*Sir James Clark.*) Would a similar board be advantageous for examining candidates for the public medical service ?—I believe it would be very advantageous.

728. (*President.*) Upon what ground?—I think that, in general, if students are going to be candidates for appointments, without knowing the exact limit of knowledge that they must reach, they will reach a much higher limit than if they have to study for a mere pass examination. Those who now come to be candidates for the East India Company's medical service cannot tell how much they must know. They only know that they must be better than a certain number of other candidates.

729. That would be the means, would it not, of getting a better class of officers?—Yes.

730. (*Sir Thomas Phillips.*) You would, in that case have one positive standard of admission applicable to the army, the navy, and the East India Company's medical service?—There is a positive standard in the judgment of the India examiners : but except at the same board there could not be always the same positive standard that the India examiners have assumed : theirs is higher than that for the diploma of any of the Colleges of Surgeons.

731. Assuming one board to examine for the three departments, namely, the East India Company, the navy, and the army, the positive standard would be alike for all the men ?—Yes, it might I think.

732. (*President.*) So far as general knowledge went?—Yes.

733. (*Mr. Martin.*) You think that, besides those considerations, an examination by teachers and professors of the several sciences would have an advantage over any ordinary board of medical men whether civil or military?—I think so, in the case of competitive examinations. I think that no ordinary board could estimate very well what a student may learn of some of the subjects which are being taught. Most of our courts of examiners have little knowledge of what is being taught in general anatomy and physiology in the schools, the examiners not having been teachers for many years, if ever.

734. (*Sir James Clark.*) In fact, a man must be occupied with the subject as a teacher to be able to examine?—To be fairly examined in competitions, candidates ought to be thoroughly examined on that which they have been studying, and that can only be done by those who are, or lately have been, teachers.

735. (*Mr. Alexander.*) You think that if you hold out inducements you will always have a sufficient number of men to come up to any standard ?—To a standard fully as high as that of the East India Company's service.

736. (*President.*) You are not afraid of not getting a sufficient supply of candidates if you make the standard so high ?—No, the number has increased. The number of candidates for the East India Company's medical service is really very large ; it is, I believe, not less than ten per cent. of all who are diplomatized in Great Britain.

737. If the army medical service were improved in position and emoluments and advantages generally, and therefore was competed for in the market with the East India Company, would you lose your candidates?—Yes.

738. To any great extent ?—I could hardly tell to what extent, but there would be a more even distribution.

739. Would it not very soon find its level ; there would be more good candidates for both, would there not?—Yes.

740. In point of fact there would be an almost unlimited supply ?—Yes.

741. (*Dr. Andrew Smith.*) What is your opinion as to the number of patients that the general practitioners throughout the kingdom will see daily?—It is very

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difficult to say; there are many who see forty or fifty.

742. Do you think that is the average?—That is above the average; I should say as to those in active practice that it might average twenty; but then they lie far apart. I suppose that those forty or fifty cases mentioned by you are the same seen every day. I suppose that every army surgeon sees every one of his patients every day.

743. Yes.—That would not be the case in civil practice. The majority of chronic cases in civil practice are not seen daily; they would be seen once or twice a week.

744. (*Sir Thomas Phillips.*) You would agree, would you not, with Sir Benjamin Brodie that there ought to be some means, other than a diploma of the Royal College of Surgeons, to show that the candidates for army surgeons have been conversant with medical practice?—Certainly; they ought to be in the full sense general practioners.

745. In what mode would you attain that knowledge now? Would you do so by a certificate of the Apothecaries' Company?—As applicable to England, that would be a very fair one.

746. Or the extra licence of the College of Physicians?—Yes.

747. That would also be a higher standard, would it not?—I believe not.

748. But a satisfactory one?—Yes; I think it would be sufficient to require that every candidate should possess licences or diplomas qualifying for practice in medicine and in surgery in any part of the united kingdom. A regulation narrower than this, or requiring diplomas from particular colleges, would diminish the number of good candidates for the public services; and the safety of the services against the laxity of certain diplomatizing boards might be secured by the strictness of their own examiners.

749. Suppose a candidate admitted and sent down to the general military hospital for the purpose of special instruction, do you also think that he ought to be for some time regarded as a probationer, in order that opportunites may be afforded of observing his moral qualities?—I do not think that it would be commonly found that a man deficient in moral qualities would enter the medical department of the army.

750. I mean his general fitness for service; his trustworthiness, obedience, and good conduct?—I think that there might be required something like a confirmation of his appointment after ascertaining his character.

751. (*Sir James Clark.*) From your acquaintance with the habits of medical students, and the great variety which exists in the qualifications required by numerous boards, do you consider that a board placed between those bodies and the public service would be a very useful one?—A very useful one.

752. Both by protecting the service on the one side and raising the character of those bodies on the other?—I should think it quite essential for the service.

753. (*Sir Thomas Phillips.*) Do you agree with Sir Benjamin Brodie, that selection by merit would be a most advantageous means of promotion, supposing it to be attainable?—Yes.

754. Could you suggest to the Commissioners tests that, in your judgment, would facilitate a sound conclusion on that subject?—I hardly know what means there are for determining merit; it might perhaps be determined by the reports or records kept of the conditions of the regiments.

755. (*President.*) You must so do it, to a certain degree, with an army scattered all over the world?—Yes; so far as I can imagine, it would be one of the best tests to take the reports of the regiments, the reports of cases, and the reports of the general sanitary conditions of the regiments.

756. And the opinion of the medical officer in charge, of those serving under him?—Yes.

757. (*Mr. Alexander.*) Do you examine practically on anatomy; do you put a body before the students?—It is not a practical examination in anatomy, but in operative surgery; and during the examination it is usual to ask them questions as to the parts they have exposed.

758. By your examination, they must show that they really know it?—Yes; they must do the operations, and explain them, and they must know all the guides for them.

759. They are not crammed?—No; there can be no cramming for such an examination as that.

The witness withdrew.

Dr. Edmund A. Parkes, examined.

Dr. E. A. Parkes.

760. (*Sir James Clark.*) You are professor of clinical medicine in University College, physician to University College Hospital, and also one of the board of medical examiners of the East India Company, are you not?—Yes.

761. Are you satisfied with the results of those examinations generally?—I have only been present at two. I was at the first examination in January 1855, and again at the examination in January 1857, and I was very much struck with the improvement in the candidates. At the first examination I did not think, though there were some extremely good men, that the bulk of them quite came up to my expectation. At the last examination, where there was the large number of forty-six, there were some extremely good men, all the twenty-two men that were chosen were very valuable public servants; and I fancy that the same thing was apparent to the other examiners. There was a great improvement at the last examination over the previous ones.

762. Judging from your experience of that examination, and your knowledge of medical students, and the laxity of many examining boards, you consider the East India Company's examination a very useful and necessary one?—It is, I consider, extremely useful and quite necessary.

763. You think that it has had a good effect in raising the character of medical schools?—It has had a good effect in making many candidates work extremely hard. I have opportunities of seeing that; now they are working extremely hard for the next examination.

764. In the most valuable branches of the profession, in clinical medicine, and operative surgery, is that the case?—Yes.

765. It is your opinion, is it not, that a competitive examination is useful in stimulating young men to exertion?—It is very useful indeed in stimulating all those who intend to become competitors; a great many intend to become competitors who do not finally become so.

766. Are you of opinion that the candidates for the army and navy medical service should receive special instruction for their future duties after or before they have entered the service?—After they have entered the service; and they should then be instructed fully.

767. Do you think that a second examination after they have been sometime in the service would be useful?—Very useful; but I can scarcely see how it is to be brought to bear now. If it can be done I think it would be very useful. It is done in the navy medical department I understand.

768. (*President.*) Will you state the difficulties which you see?—The difficulties are, as to an officer who has been serving at a foreign station, say New Zealand; he has done his duties well, and he is, perhaps, a valuable surgeon; such a man is not likely, after fifteen years' service, to make a very creditable

examination, but it would be hard to deprive that man of his promotion.

769. Supposing that there were more leave of absence given, how would that affect the case?—That is quite a different thing; if it were possible to have a rotation, so that a man after a certain time in a colony should have opportunities of coming home and making up his lee-way, I think that a second examination would be very valuable.

770. Is it not the practice in the navy, when a medical officer is on a foreign station, that he receives his promotion subject to passing his examination when he comes home?—Yes; but an assistant surgeon is frequently at home. Every three years a ship goes out of commission, and then he has a chance of hearing a good deal of what is going on in his profession.

771. Practically, is it not the case that he studies on board ship?—He may study on board ship, but I suspect that not much is done on board. At the large hospital at Haslar, I suppose there is a great deal done.

772. (*Sir James Clark.*) Supposing a second examination could be established, in what respect should it differ from the first?—I think that the second examination should, to a considerable extent, refer to hygiene and sanitary matters.

773. It should be to test his knowledge of the specialities of his profession, to show that he still retains a knowledge of his profession?—Yes.

774. (*President.*) For these professional peculiarities, would not the service be the very best school that he could have?—Yes, certainly.

775. It is a thing not to be learnt at once, but actually in practice, by observation?—But improvements go on as to details, which he could scarcely learn.

776. If the examination were upon subjects on which he would have had an opportunity of acquiring information, surely he would be better able, would he not, to meet that examination, if he had been on foreign service, than if he had been walking a London hospital?—I do not know that one would restrict the examination entirely to that; I think that a man should have an opportunity of rubbing up the science of his profession, as well as the mere application of it.

777. Even if that second examination were confined to the military part of his profession, you think that it would be better than having only one examination?—Yes, if that can be done without injustice to officers who are thrown in positions where they cannot acquire that knowledge.

778. (*Sir Thomas Phillips.*) The examiner might be able to ascertain whether he had availed himself of his opportunities for study?—To a certain extent, I think that if the examination were conducted on the principles of hygiene, there would not be so much injustice done to medical officers serving on foreign stations.

779. (*Sir James Clark.*) Do you think that the result of that second examination should be taken into account in considering the promotion of an assistant surgeon?—I think it should, to a certain extent. At the same time, if it were possible to take into account the whole of the officer's merits, and his conduct generally, it would be well.

780. You consider the want of a second examination rather an evil in the East India Company's service do you not?—There are not means always of testing a man; I scarcely know how a medical officer could be tested in India with a second examination.

781. Do you think that the public service is now popular among medical students?—It is extremely difficult to ascertain that; I think that if the army were thrown open to competition you would be enabled to see whether it is popular or not; I should say that generally speaking it is not popular. For example, I have known good students prefer the service of the Peninsular and Oriental Company because they are better paid, and it is a more agreeable service.

782. (*Sir Thomas Phillips.*) Why is it more agreeable?—I think that they have more leave and are at home more.

783. (*Sir James Clark.*) Is it your opinion that that would render the service more popular?—If the pay of an army surgeon were increased, and his rank increased, I believe that the service would be extremely popular.

784. (*Sir H. K. Storks.*) You refer to his professional status?—Yes, and to his pension; I think that an army surgeon retiring at the end of twenty-five or thirty years as a surgeon gets such an extremely small pension that it is not a provision for him if he is married. He gets 15*s.* a day or something like that. I fancy but a small number of men attain to the higher grades of inspector-generals or deputy inspector-generals.

785. (*Sir Thomas Phillips.*) Would you make retirement compulsory at a certain age?—I think that there are many difficulties about that; many are active at an advanced age.

786. As a rule what would you do?—Then I would put the age rather advanced, I think.

787. (*Sir James Clark.*) You would rather apportion the pension to the services than to the rank, would you not?—Yes; I think that it must be apportioned also to the rank, but I would increase it altogether. I think that the pension should be very considerably increased in order to make the service attractive to medical students, and the pay also. I think that promotion in the army is scarcely quick enough.

788. (*President.*) Do you think that you could give an additional stimulus to the profession by offering prizes for reported cases to the army medical officers?—Yes, if it were possible to devise a scheme of recompence of that kind, but at the present moment I do not see my way to it.

789. Sir Benjamin Brodie gives a prize for notes of twelve cases which the students select. They select twelve cases, and each gives his own description of it, and they come in to him with a motto instead of the names; that was the case at St. George's Hospital?—Would you propose to carry out that system in the army?

790. He says that an essay is of no use, for the young men steal other men's thoughts, but that no man can supply a case except one who has been at the bedside of a patient, and he says that these come in, and he gives a prize for them periodically?—It is a capital mode of teaching; but I scarcely know how it would apply after a man had once entered the service.

791. (*Mr. Alexander.*) Could not you test it by the case-book, and by the examining officer going round and examining into this; could not it be tested by the treatment?—It must be comparative, and comparison, if there are many competitors, is very difficult. I may say that we have to make an examination twice every year at our college, where cases are sent in by competitors, and we often have great difficulty in deciding between them as to which is the best. We are employed a long time before we can tell which is the best. The amount of labour is very great.

792. (*President.*) Still you do come to a conclusion?—Yes.

793. That must stimulate the young men to pay great attention to the cases?—Yes, it has a very capital effect upon the students. I do not know how in the army, when men are dispersed in the colonies, the cases are to be sent back and compared.

794. (*Mr. Alexander.*) Do not you think that an examining officer who examines the registers regularly and sees the cases could test which was the best description among them?—I think that he might draw a general conclusion.

795. (*President.*) Do you see the cases?—Yes.

796. Therefore one element is the comparison of the description with what you know to be the fact?—Yes.

797. Sir Benjamin Brodie does not see the cases; he gives his students the choice of any cases that they like?—Yes.

798. Still he comes to a conclusion as to which is the best, and if the examiner does not see the cases

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it does not add to the difficulty if they are in Australia or at the Tower, does it?—I think that there would be no insuperable difficulty in coming to a conclusion, but a great deal of trouble would be involved.

799. It could be done as between competitors in the same hospital, could it not?—Yes.

800. Would it be advantageous to have a periodical publication in which great improvements, or any improvements, or any peculiarities in medicine or surgery, which came under the notice of army medical officers should be published with their names, with the view of giving them some distinction?—I think that it would be a very great advantage indeed, and it would give an opportunity for medical officers distinguishing themselves.

801. Would it be better to have it in a separate journal belonging to the army alone, or to bring it into contact with some civil publication of the same character, so as to make it a general contribution to medical science?—Of course, commercially, it would not pay as an army publication only; it would, therefore, be obliged to be supported by a grant of public money.

802. Would there be advantages on other grounds in bringing it into competition with similar reports from civil practitioners?—I think it would be almost better to make it entirely a separate thing for the army, it being understood that it would not be a paying affair at all. I am afraid that it would be swamped in the mass of contributions from the civil profession. I think it should stand forth as a separate thing as an army publication.

803. (*Sir James Clark.*) In France the Government pay for those publications, that are issued of the character that has been referred to, do they not?—I believe so.

804. (*President.*) Do they issue them to the army medical officers?—I believe so; that is much more possible where the army is chiefly confined to France and Algeria.

805. (*Sir Thomas Phillips.*) Would there not be the means of ascertaining by the cases or returns the absolute merit of a man, though not his relative merits?—Yes.

806. Who have been the examiners for the East India Company's service?—Mr. Paget, Dr. Hooker, Mr. Busk, and myself.

807. Would a board, consisting of about that number of gentlemen, be in your judgment adequate to test the qualifications not only of candidates for the East India Company's service, but of candidates for the navy and army medical service also?—I think that if the number of candidates was very much increased, the board must be increased also.

808. Supposing the candidates to be double in number, what ought to be the number of the board?—I think that the board, as far as the examiners in surgery and medicine go, at any rate, would have to be doubled. I think that there should be six instead of four.

809. (*President.*) Would it be the same examination, or would you have a separate examination for each service?—I have not thought much upon the subject, but I think that it might be an examination altogether.

810. (*Sir Thomas Phillips.*) The motives, of course, ought to be equal, if the standard is the same?—Yes. Medical men are drawn to the one service rather than to the other at present; they would scarcely contend for the navy, where they would contend for the army.

811. You cannot have an identity of advantage in the services?—No.

812. (*Sir Thomas Phillips.*) Are those young men that you examine subject to any kind of approval by the Board of Directors?—We send in a list to the President of the Board of Control, who would have the power of excluding, I fancy, if he wished to do so, but at present he has not exercised any veto.

813. Have all who have been recommended by you been appointed?—Yes.

814. Have any means been taken to ascertain their moral qualities in discipline, obedience, good conduct, steadiness, and punctuality?—We have required a certificate from a clergyman speaking generally to the moral character of the candidate.

815. But none as to his habits?—No; only in general terms.

816. (*President.*) Do you not find that, upon the whole, attainment in a very young man is the best guarantee for moral character?—Decidedly.

817. Though you cannot so regard it in after life.—Yes.

818. You have lately been the superintendent of the Civil Hospital at Renkioi, have you not?—Yes.

819. And you are a Queen's officer?—I was, formerly.

820. Therefore you are acquainted with the internal regulations and organization of army hospitals?—Yes, as existing at that time, and generally, from hearsay, as existing now.

821. Will you state whether you had any powers at Renkioi, as regarded the supplies and the general management of the hospital, with respect to the duties of the purveyor or the engineer, or the servants of the hospital, which are not possessed by a medical man in an army hospital?—I think that my powers as to the purveyor were identical with those of the principal medical officer at a military hospital. I called upon him for the supplies that I deemed necessary for the hospital, and on my authority he furnished them, either obtaining them from the commissariat or buying them in the open market. The purveyor was relieved of all responsibility immediately that he had my order. I took then the responsibility, and became answerable to the Government for the expense which he incurred.

822. Did you give him any table or any list of the things which were to be provided as a matter of course for every patient, or did you give him a separate order for so many beds, and so on?—I furnished the hospital, to a certain extent, before the patients were sent there; and afterwards, when they were sent there, I enlarged the hospital according to circumstances. On my order, he furnished certain wards. I ordered him to furnish a ward for fifty patients, and gave him a list of the articles necessary for that ward. I had the supplies in store; we had them furnished on my requisition. They were sent out from England, and they were taken over by the purveyor at Renkioi, and he then became responsible to the Government at home for them.

823. As you made the original requisition for the stores, your requisition covered things which are not usually given in military hospitals, did it not?—I fancy that everything that I gave was given in the military hospitals after the commencement of the war.

824. For instance, you did not trust to the soldier bringing in his kit?—No; I provided the clothing. Directly a soldier came into the hospital I took from him everything, his knife and fork, cup and clothes, and supplied him entirely with hospital furniture and hospital utensils, the others remaining in store till he went out.

825. That is not the custom in the Queen's army in peace, is it?—No; I believe that it was the custom at Scutari in the war.

826. With regard to the purveyor, the difference of the position which you occupied as compared with an army medical officer was, that the whole responsibility rested upon you; you ordered whatever you chose, and he was to obey without remonstrance?—Yes; he had it in his power, under his regulations, if he supposed an order that I gave him to be extremely extravagant, to refer home to the War Office, but before receiving his answer he was to act upon my order, and to give me the thing under protest.

827. Is there any point in which your position was different?—I think, as far as the purveyor is concerned, the principal medical officer of a military

hospital held precisely the same position with myself; he ordered, and the purveyor supplied.

828. The only difference was that you had a complete list of all the things to be supplied, which were supplied without delay or difficulty?—Yes.

829. With regard to the engineer, how did you stand?—My position was this:—We had a twofold duty to perform; we had to build the hospital, and afterwards to keep it in repair. With regard to building it, the hospital was sent out according to a certain plan, and every kind of store with it.

830. Were you consulted as to the original construction of the hospital?—I saw the plans.

831. (*Mr. Stafford.*) Were you consulted as to the site?—I was responsible for it. I chose the site in conjunction with Mr. Brunton the engineer.

832. (*President.*) What medical officer do you suppose decided upon the construction, or had a veto upon it?—The hospital was constructed by Mr. Brunel, and various medical men in England saw it. I believe Sir James Clark saw it. Before I went out I saw it. I saw Mr. Brunel several times, and I was requested to suggest anything that was desirable, and the plan was laid, I believe, before several medical gentlemen in England. Then, with regard to the site, I was ordered to proceed out to join the engineer, Mr. Brunton, and to choose with him the site. He was especially to judge of the drainage and the water supply, and I was to judge generally as to the sanitary condition of the site, and as to its availability for the purposes of a secondary hospital. Then with regard to the building, certain discretionary powers were left to me and Mr. Brunton to alter the arrangements of the building if we thought it necessary to do so. As it happened, very few alterations were made. Then, subsequently, my powers as to the engineer were, that when the hospital was fully completed, if it had been necessary to alter any part of it I could have called upon him to do so, the War Office instructions being, that I was not to go to any great expense in alterations without a reference home; or if such alterations were so imperative that I did not think they could be delayed, then I was to refer to the commandant at Scutari and get his authority for any great expense. As to any moderate expenses the War Office gave me authority to incur them.

833. Were you empowered to order any alterations as to drainage or ventilation?—Yes, if it had been necessary; if the system of drainage had been imperfect, and a slight outlay would have improved it, I should at once have altered it; but no such thing was required, the whole thing having been done at first on a good plan. Subsequently, had the hospital continued, alterations or repairs would have been rendered necessary, and I should have taken upon myself the responsibility of doing them, always reporting home any expense; that was all. As to the latter part of the question, referring to the servants of the hospital, a certain number were civilian orderlies; over them I had full powers.

834. Were they the hospital corps?—No; they were civilians engaged for that special service, and I could dismiss them, suspend them, or fine them. There were a certain number of soldiers employed; I had the same power over them as the principal medical officers of military hospitals. When they committed any offence I reported them to the commandant of the place, who punished them according to the military regulations.

835. Where did you get them from?—The civilian orderlies were engaged in London.

836. I suppose you had to weed them out very fast?—No; as a body they were an extremely good set of men, and had been well chosen.

837. What previous situations had they filled?—They were very various; we had them almost of every trade.

838. (*Sir H. K. Storks.*) Were they better than the soldier orderlies?—Yes; but we had some very good soldier orderlies. I think that the civilians were better educated, but the soldier orderlies were extremely useful.

839. Which were the most manageable, the soldier orderlies or the civilians?—The civilians were much more manageable; they were a much better class of men; there was less drinking amongst them. I had no trouble with the civilians; the soldier orderlies were of two classes, some of them had been sent on from Chatham to Smyrna, with an increase of sixpence daily to their pay; and when Smyrna was broken up a certain number were sent on to Renkioi; the other soldiers were men who had been sent down as patients, but who had been cured, and they were obtained from the commandant by requisition.

840. (*Mr. Stafford.*) You had no selection with the soldier orderlies?—No.

841. (*Sir James Clark.*) Great care was taken to select the civilians?—Yes.

842. Had you nurses in the wards?—Yes, a small number.

843. Had you as little trouble with them as with the orderlies?—Some of the nurses were very good.

844. How did the nurses and the orderlies work together?—Very well.

845. Do you think that female nurses might be introduced into the hospitals in the army?—I have a very high opinion of female nurses if they have been trained, and are proper nurses. I think it might be made a profession for some of the poorer classes, with proper regulations. At present they are very difficult to get, and some of ours did not behave well, although some behaved extremely well.

846. (*President.*) Had you any difficulty in the management of the patients?—None at all.

847. Had you any military officer in the hospital?—Yes, we had a commandant. In the first instance we had an officer acting as adjutant in command of the troops, Mr. Bennett, of the Seventh Fusileers. Subsequently, when Smyrna was broken up, Major Chads was sent to Renkioi, and acted to the end of the war in command.

848. Had you the same discipline as in a military hospital?—Yes.

849. The only difference was, that you were a civilian and the medical officers under you?—Yes, they were all civilians.

850. Did you find any difficulty in exercising authority over them?—Not at all.

851. What distribution did you make, did you divide them into ranks?—They were divided into ranks in England at different rates; there were assistant surgeons, and assistant physicians, physicians, and surgeons.

852. Corresponding to the first class staff surgeons?—Yes; and to the second class staff and assistant surgeons of the army. Each assistant surgeon or assistant physician was put in charge of a ward containing fifty patients; a physician or a surgeon would have had charge of a division of ten wards containing 500 patients, if the hospital had ever been in full operation.

853. (*Mr. Stafford.*) What was the largest number you ever had?—640, at one time.

854. (*President.*) Is there any other point in which you had power different from medical officers in a military hospital?—I think the only difference in my position was in the greater power I had of ordering alterations in the hospital by the engineer.

855. (*Sir H. K. Storks.*) You had more power over the orderlies?—I had more power over the civilian orderlies. I could stop their pay or dismiss them.

856. (*President.*) Has the new hospital corps come under your cognizance?—Not at all. From my experience at Renkioi I should say that the principal medical officer ought to have more power over the military orderlies. At present he has not enough power; he cannot in any way punish them but merely sends a report to the military officer who has the power of punishing them; but that does not give him, the medical officer, sufficient power over the orderlies; and I think means should be devised for bringing them more immediately under his control.

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857. Would you carry that so far as to give him the power of dismissal?—I do not know that; but I would go as far as I possibly could without resorting to final measures; perhaps not dismissal.

858. Do you think that the system with regard to the orderlies would work well if they were put, not under the immediate power of the medical officer, but under the commandant?—I think it would work better if they were put under the immediate power of the medical officer and if he had the power of punishment to a certain extent. I think that in many cases the commandant scarcely inflicts the punishment that should be inflicted. Sometimes he inflicts more and sometimes he inflicts less; and the medical officer, who knows the offence and the previous conduct of the man in the hospital, is evidently the proper person to know exactly how much he should be punished; and he should have power to order that a man should return to duty and have so many days drill, or undergo confinement in barracks; or he should have the power of giving good conduct stripes to a man and of taking them off again, reporting, of course, to the proper authorities.

859. Those men being non-combatants?—Being military orderlies. I may state that my observation about the good conduct stripes is merely an illustration of the kind of power that I should wish to see given.

860. You think that those orderlies ought to be under the immediate authority, and ought to receive their punishment, when they do wrong, from the hands of the medical officer under whom they are placed?—Yes.

861. Otherwise he would never have the proper degree of authority and weight?—I do not think he would.

862. Would you propose any alterations in the powers possessed by the principal medical officers in military hospitals?—As far as I understand the powers of the principal medical officer in a military hospital, they are sufficient as to the purveying department, but insufficient as to the general arrangements of the hospital; and respecting the construction of hospitals, he has not sufficient power to get things done that ought to be done, as far as I understand it; he should have a certain power to expend money without reference to anybody within a certain sum; I think he might be made as answerable to the Government for the expenditure of 100*l.* or 200*l.* as any other officer.

863. You are of opinion that no hospital should be built without its site and construction being submitted to the opinion of some competent medical authority?—Yes.

864. And afterwards, when the medical officer is placed in it, questions relating to alterations or repairs or improvements, within certain limits, should be left to the unchecked authority of the principal medical officer?—Yes: always supposing that he reports immediately to the head of his department the alterations which he is making.

865. Would there not be the danger of a man without any check whatever having the hobby of making improvements and making them unnecessarily?—I scarcely think there would be, with the inspectors general of the army. Of course, the limit of expense should be defined, and no great alteration should be made.

866. Do you contemplate that a hospital should exist without any authority in it higher than the rank of the principal medical officer?—There must be a military officer always attached to it, for the maintenance of order.

867. He might be an adjutant?—Yes.

868. Should there not be some person in the position of governor of the hospital, who ought to be supreme, and to have the power of deciding on matters which are too pressing to be referred home?—I scarcely know what things there are which the principal medical officer could not decide.

869. At present the principal medical officer makes a representation to the commandant of any alteration that may be required, and he, I think, makes a representation to the general commanding the district?—Yes; and probably with a good commandant and a good medical officer, any necessary thing would be done; but I can conceive circumstances in which a commandant, from timidity, or from fear of expending money, may not like to take the responsibility of doing so.

870. Why do you think that this superior authority would be unwilling to undertake a responsibility which the medical man would not hesitate to undertake?—I think that the medical man who is responsible for the safety of the sick, and is impressed with the necessity of action, is far less likely to hesitate.

871. Looking to the large number of our establishments all over the world, and the anxiety at home for economy, would it be safe, in your opinion, to trust so many persons with the power of expending money without a single check upon their opinions?—Of course it is understood that the limit of the expense is not to be very great. Nothing great is to be done; but constantly expenses occur in a hospital, such as the alterations of drains, breaking up drains, alterations of ventilation, and things of that kind, and obtaining barrack furniture which may be immediately necessary, and which the principal medical officer now has no power of expending a single farthing upon, as far as I know; and I think that he should have the same power of ordering those things to be done, and paying for them through the purveyor, as he has of ordering provisions.

872. Those things cannot now be done without reference home?—Reference to superior authorities.

873. (*Mr. Stafford.*) You think that the position you occupied in Renkioi Hospital was that which every principal medical officer should occupy in a military hospital?—Precisely.

874. You were financially responsible to the Treasury?—Yes, to the War Department. My position was not very different from that of any principal medical officer in a military hospital, except that I had the power of expending within certain limits certain sums of money for the improvement of the hospital; the precise limits were not stated.

875. (*Sir James Clark.*) Did you find that power very useful on certain occasions?—It would have been, but the hospital was very new, and we were not there long. I ordered additional furniture when necessary.

876. (*President.*) Could not that have been done in an army hospital in ordinary times?—I fancy that a requisition would have been made to the commandant, and sent on to the barrack department or to the engineer.

877. (*Mr. Stafford.*) At Abydos, for instance, the principal medical officer there had not the same power that you had?—He had not in some respects. I heard him say as to that, that he was anxious to procure some stools for the men to sit upon, and it was months before he could get them.

878. (*President.*) Had he to refer home for leave?—No; but he had to refer up to Constantinople. In my position, if I found them necessary, I should have ordered them to be made.

879. Were the provisions supplied by the purveyor or by the commissariat?—By the purveyor. We had a contract which was made by the commissariat.

880. Who supplied the purveyor? the commissariat?—Yes; he was supplied with anything that he wanted.

881. And therefore, the financial arrangements passed between the commissariat and the Treasury, and not between the purveyor and the Treasury?—In the first place, it was between the commissariat and Treasury; subsequently the War Office directed that the purveyor should take up all the powers from the commissariat, but the commissariat made the contract.

882. With regard to medical comforts, they are not supplied at all by the commissariat, are they?—They

do not generally possess them; when they do, they supply them, such as sugar or rice.

883. Arrowroot or sago?—I do not think they ever have any of those articles.

884. That system worked smoothly, did it?—Quite so.

885. There was no clashing between the commissariat and the purveyor?—Not in the least.

886. (*Mr. Martin.*) You have served in the East Indies, and in the Burmese dominions?—Yes.

887. In one of Her Majesty's regiments?—Yes, the 84th regiment.

888. You saw everywhere there, did you not, that the external causes of disease were very emphatic in their effects upon the soldier's health?—Yes, to a very great degree; almost everywhere.

889. Are you satisfied that a knowledge of such influences is a preliminary necessity for a young medical officer?—Yes.

890. Are you satisfied also that next in order of importance to the discoveries made in physiology within the last hundred years stand the discoveries made as to those external causes of disease which affect organized bodies in our fleets and armies?—Yes.

891. With regard to the welfare of civil communities and organized bodies of men, do you regard sanitary science as of the first importance in medical knowledge, and that the treatment and cure of disease are secondary and subordinate?—Yes.

892. Do you consider that knowledge in sanitary science is a matter which may be picked up in after life haphazard in the course of military service, or that it should be taught as a preliminary step in medical education?—It should be taught, I think, in the first instance as a preliminary.

893. Is a young medical officer now instructed in sanitary science before proceeding on foreign service, or are there any means employed to that end?—I am not aware that there is any special training or special means employed.

894. But you hold such to be an essential requirement?—A very essential one.

895. Is he fit now to examine recruits, and to determine the description of man who is fit for the infantry, cavalry, or artillery before he enters the service?—I can scarcely reply to that question; when I entered the army first it was the custom to give assistant surgeons instruction as far as possible in those branches; and they attended in London: some of them, for that purpose.

896. Does the young medical officer now receive instruction respecting the accoutrements and the clothing of the soldier as suitable to the various climates in which he serves?—I believe not.

897. Should he not be instructed with regard to the construction and arrangement of barracks and hospitals, and the details of the arrangement of hospital expenditure?—Yes; it is most essential that he should be so instructed.

898. Should he not be taught to apportion the accommodation of men in tents, barracks, and hospitals, and to understand what space is required for preserving health in various climates?—Yes.

899. Should he not be informed as to the best modes of conducting the march of troops in different climates, so as to conduce to the preservation of their health?—That is extremely important.

900. Should he not be instructed with regard to the influence of night duties and employment on the health of the soldier?—Yes.

901. Should he not be instructed as to the nature, causes, and treatment of formidable diseases which exist in tropical climates?—Yes; as far as such instruction can be given to him.

902. Is not instruction in all these matters as necessary to him during peace as during war?—Precisely.

903. Would not the public money employed in such preparatory education be amply repaid by the improved health of the soldier under the care of such officers?—Yes; if you gave the officer power to carry out his hygienic knowledge.

904. Can a medical officer, who is wanting in the preliminary knowledge which has been specified, be a proper person to enter on the duties of the army?—Not to undertake all the duties which will probably fall to him.

905. Has not the want of such a course of preliminary instruction long been felt as a great public defect in the arrangements of the medical department of the army?—I think so.

906. When a medical officer who is deficient or altogether wanting in such hygienic knowledge enters upon the duties of the army, does he not, in after life, to a great degree, acquire such knowledge at the expense of the soldier?—Yes; he will, perhaps, in many cases; that is to say, things occur that may affect the soldier which he might have removed had he possessed greater knowledge.

907. Is any instruction imparted to the young medical officer of the army as to economy of food or the dietary proper in the various climates and colonies in which he may happen to serve?—I am not aware that there is.

908. Does there exist, for the use of young medical officers, any work in the form of a manual of sanitary science?—There are some French works, I do not know of any English, though there are a great many sanitary laws and regulations laid down in various English works on the army.

909. Do you not think that it would be a great boon to have such a manual placed in the hands of young medical officers?—Yes; a good manual of that kind, embracing all the stations of the army.

910. (*President.*) Are those French works practically much used?—I do not know.

911. (*Mr. Martin.*) If commanders of regiments, brigades, or divisions knew that the medical officers possessed medical instruction on those important points, would they not receive them and acknowledge them as their sanitary advisers in everything relating to the soldiers' health?—I believe every good commanding officer would.

912. Would they not be much more likely to do so if the details of the instruction were more definite and certain than they are now?—Yes; anything that gave prominence to that study would be likely to increase its value in the minds of military officers.

913. And the chief medical officer, if so endowed, would stand in the same relation to the Commander of the Forces?—Precisely.

914. Do you think, referring to that, as well as to other scientific questions, that it would be a great benefit if medical officers returning home, whether on sick leave or ordinary leave, were required to enter into the study in the hospitals and institutions of the country?—I think it would be a very desirable thing if it could be done; and a great many of them do it to a certain extent.

915. Would it not be better if it were made imperative?—Yes; I should think it would be better, if it were possible, for the exigencies of the service, to make it imperative.

916. (*Mr. Stafford.*) Have you contributed any paper as to the result of your experience with regard to the influence of climate at Renkioi and in the Dardanelles on disease?—Our experience was very small, for we were really only about seven months in anything like active operations, and our patients were very limited, so that we had not a sufficient basis of facts.

917. Will there be no record of the foundation and practical results of that hospital?—I have drawn up a short report for the Government, embracing the mechanical construction of the hospital chiefly.

918. What was the mortality at Renkioi on the whole?—Three-and-three-quarters per cent.

919. Did you find the convalescence rapid or slow?—Very rapid. The mortality was chiefly among the men of the Laud Transport Corps; they suffered very much.

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920. Were you able to draw any conclusion as to the effect of the climate on pulmonary diseases?—We thought it very good for consumptive diseases; many men with very considerable disease of the lungs rallied very much there indeed; and we understood that consumption was uncommon round about among the Turks, but it was more common among the Greeks.

921. What became of the soldiers when they left you; did they go at once to duty in the front?—No, they were generally sent up to Abydos for some time, and then they went subsequently to Scutari, where they joined the general depôt.

922. So that there was always an interval?—Yes, between leaving the hospital and again entering into active service, a considerable interval.

923. (*President.*) What arrangements had you for cooking?—We had iron kitchens sent out, and we could cook in each kitchen for 500 patients.

924. Did you cook the ration as it is cooked in a military hospital?—Yes; the kitchens were fitted up very nicely with boilers; we could bake and boil, but we did not steam.

925. Was the ration the same as the army ration?—Yes; it was very much the same as at Scutari.

926. (*President.*) Did you measure your rations for distribution; were they weighed before cooking or afterwards?—They were weighed before cooking.

927. For each person separately?—No; the meat was sent in to each ward in a net for all the patients on full diet, and another net was sent in containing the diet for all the patients on half diet, and the meat was divided in the ward.

928. After being cooked?—Yes.

929. That is contrary to hospital practice with us, is it not?—I think not.

930. Can you supply any forms or returns that you used?—The only difference in our hospital from that of a military hospital, that I know of, was a plan that I found extremely useful, and which I think might be extended to an army in the field or to any extent; it was the plan of requiring every day from each medical officer engaged in treating the sick a special report stating whether or not anything had been brought under his cognizance as to the diet of the patients, the hygienic condition of the buildings, or any other points which required alteration. We had a printed system of reports every day from every medical officer.

931. If there was nothing wrong the report came in as "*Nil*"?—Yes; and in that way every junior medical officer could represent at once to the head of the hospital anything that was at all wrong or required remedying. I have brought down some copies to show the way in which it worked. I selected the first batch that I took hold of. I took the first month, and I have brought here an account of all the defects that occurred in that month in a particular ward. I will hand it in, and the Commissioners will see how the thing worked (*the form was handed in*).

932. A report in this form was made to you by every officer?—Yes.

933. You think the merit of this is that you get the opinion of a man who would not probably report to the orderly officer?—Yes; and on matters which the orderly officer never has an opportunity of seeing. Every man speaks for his own ward, and I would extend that system to every regiment, during a campaign, to know if a surgeon does not get his medicines, or his requisitions attended to; or if the defects, such as they are, are not immediately remedied. If an officer does not report it is his own fault, and the responsibility of any calamity should fall upon him.

934. (*Mr. Alexander.*) What diet tables had you?—Extra and common diet.

935. Was that done daily? Did you write the name of every patient every day, or was it extended for a week or a month?—I had a ward diet-book in which a single line gave the number of men and gave the diet for the day. The names of the men were not written down.

936. Did the bed ticket include the man's whole treatment?—Yes; the diet was also inserted in it; the advantage of that was that the soldier saw what his diet was himself, and if he did not get it, he was sure to complain of it.

937. (*President.*) It was a check upon his not getting the dinner ordered for him if he knew what it was?—Yes.

938. At what o'clock were the rounds gone by the medical men?—They visited the wards at half-past nine in the morning. It was during the winter that we were in action.

939. Then you had not time to make diet rolls for the day, but for the day following?—Yes; they visited them again in the evening, and the orderly officer was obliged to go round twice in the night, generally three times, at uncertain hours.

940. Did any practical inconvenience result from the diet roll being made for the next day?—No; and the medical officer of the ward was allowed to order any extras he pleased; for instance, if a man was particularly ill.

941. Or as a substitute for the diet which had been ordered?—Yes.

942. But that would produce some little confusion of account?—No; for there was a separate sheet kept for such extras.

943. In the French hospitals they order the diet for each day, do they not?—Yes; the visit is made very early.

944. Would it be possible in our service?—Yes, in summer; it was in contemplation for us to do it, by visiting from half-past six to seven o'clock.

945. In India the practice is to make an early visit, and the diet is ordered for that day?—Almost always, I believe.

946. You have seen both practices?—Yes; I prefer the dinner ordered for the day, if it is possible. One must not, however, press the purveyor and steward too much in his store in making up the accounts and weighing out the things.

947. (*Mr. Martin.*) In India with the subordinate medical department, and a steward who represents the commissariat of the hospital, a thing is ordered and done immediately?—Yes; in India the visit is concluded before half-past seven.

948. (*President.*) Have you any reason to suspect that there was much malingering of soldiers in your hospital?—We thought that there was very little; we had heard there was a great deal. I asked almost all the medical men as to whether there was or not, and they thought there was very little indeed. The men were always anxious to get back to their duty, but in two or three instances it was not so.

The witness withdrew.

Adjourned till Monday next, at One o'clock.

Monday, 18th May 1857.

PRESENT :

The Right Honourable Sidney Herbert, M.P.	Sir Thomas Phillips.
A. S. Stafford, Esq., M.P.	Sir James Clark, Bart.
Col. Sir Henry K. Storks, K.C.B.	James R. Martin, Esq., F.R.S.
Dr. Andrew Smith.	Dr. John Sutherland.
Thomas Alexander, Esq., C.B.	

President, The Right Honourable SIDNEY HERBERT, M.P.

John Meyer, Esq., late Medical Superintendent of the Civil Hospital at Smyrna, examined. *J. Meyer, Esq.*

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949. (*President.*) You were formerly in the public service in Van Diemen's Land, were you not?—Yes, I was for nine years in charge of an hospital and lunatic asylum.

950. Were you ever in the Army Medical Service?—Never.

951. You were appointed chief medical officer of the civil hospital at Smyrna, were you not?—Yes.

952. Are you acquainted generally with the rules for admission into the Army Medical Service?—Very generally.

953. You are aware, are you not, what are the diplomas exacted from candidates?—Not fully. I know generally, but I could not be certain that I am correct in it; my attention has never been turned to that subject; generally I am aware of them.

954. Do you think that it is wise to give prominence to the surgical element in the selection of a candidate?—Yes. But I think it most desirable that every man entering the army service should also possess a medical diploma from some one of the bodies authorized to license medical practitioners.

955. On the ground that the majority of cases treated are medical?—They must be medical.

956. In your opinion, from what you have seen, should you say that there is any advantage in exacting courses of military hygiene before a candidate comes for examination, or would you trust to instruction to be given afterwards?—I should think that he would learn that after he had entered the service far better than before.

957. Would you require any test as to his general education?—Certainly.

958. If you can get it?—Yes, as far as possible.

959. On what ground?—A man without a good general education cannot possibly make a good medical man; he must first learn how to learn before he enters upon the profession. Most men enter far too young upon the specific study of the profession itself.

960. Should you say that it would be better that there should be an independent board of examiners or one within the profession itself for the candidates for admission into the Army Medical Service, independent of the army?—Yes, I should think that by far the best plan is that which is now adopted by the East India Company, who select, I believe, examiners from the different schools in London, independent altogether of the service.

961. That makes it necessary that the examination should be one on subjects not specially military?—Yes, but that I should not think would be a matter of any great moment. You want a man of good general education, a practitioner well qualified. He would learn afterwards the specific knowledge required to make a military medical officer.

962. Should you say that it would be an advantage to have any subsequent examination, or would you be content with the examination on admission?—It is a question which I do not feel myself prepared to answer.

963. With a view to encourage young men to come to you, and for the benefit of the medical profession generally, do you think that there would be a disadvantage in allowing army medical officers to engage in private practice?—I think not; there are some disadvantages, but I think that the advantages preponderate, and that it would be better to allow them to practise privately and to encourage them to do it.

964. Do you imagine that it would be necessary to make some augmentation of the rates of pay, with a view to attract the best students to the Army Medical Service?—Yes, I should think it would be.

965. And any alteration in the system of promotion as regards selection or seniority?—I should suppose that it would be desirable to adopt some system of promotion by selection, but I am not sufficiently acquainted with that subject to give any positive opinion.

966. In the hospital in which you were engaged at Smyrna were the senior ranks of the medical officers engaged in purely medical duties, or was the internal administration of the hospital entrusted to them?—The internal administration of the hospital was entrusted to them to a certain extent,—they also attended patients; each senior medical officer had a division of the hospital under his charge, and it became part of his duty to see that the internal arrangements were properly carried out.

967. Did he write requisitions for all things that were necessary for the comfort of the patients?—Yes, he had to make them, but a junior could make them too.

968. Those were requisitions for extras, were they not?—Everything required for each individual patient was supplied as a matter of course in the building. A list was made out for every bed and that was provided for every bed. Then there was a scale of diet and authorized lists of extras; those were ordered, and anything further could be procured, if necessary, upon special application.

969. Did you make ranks corresponding to the army ranks?—The pay was different; we distinguished the full physician, the surgeon, the assistant-physician, and the assistant-surgeon.

970. Did you make any regulation that the requisition of the assistant-surgeon for an extra should be countersigned?—No; we trusted to the officer treating in every case to make a requisition for what he thought necessary for the sick; if the senior was not present it was signed by the junior putting "for so and so," the senior.

971. If the senior had been present would he have done it?—It would have gone to him and he would have signed it himself.

972. Though not treating the patient?—For diet the man treating the patient would get the diet.

973. And medicine too?—Yes, without any counter signature.

974. You had a table of diets, had you not?—Yes.

975. What constituted an extra with you?—We had a list of extras and a scale of diets, and articles not included in the scale of diets constituted the extras.

976. But the scale of diet could be ordered, could it not, without any counter signature?—Yes, by the officer treating.

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977. But not an extra?—Yes, I think I said before, anything extra that might be required

978. Will you give an illustration?—If any article of furniture was required in a division, not diet, then a requisition would be made by the senior officer of the division of the hospital.

979. An article of furniture not included in the list would be supplied, you say, on the requisition of the senior medical officer?—Yes, but the diets and medicines would only require the requisition of the medical officer attending the patient.

980. At first you found that the scale upon which they went was extravagant, did you not, as to orders of that kind?—There was a good deal of extravagance; many of the officers had never ordered diets in a similar way, they had not had experience.

981. Then you established a regular diet scale?—No, I was obliged to limit the extras, and to establish a list of authorized extras, then I got things into order by that and by other means that were taken to check the extravagant orders given by some of the officers.

982. (*Sir James Clark.*) What were the things that were most extravagantly used?—Quantities of wine and extras, such as fruit, oranges, and puddings.

983. (*President.*) Although everything that was used for the ordinary course of the hospital was provided by the purveyor without a requisition, on the other hand the purveyor was bound to provide everything in the shape of an extra, however extraordinary it might be, upon the requisition of the medical officer?—Not if it exceeded, if it was not in the list of authorized extras, in that case the medical officer must come to the superintendent and report his reasons for requesting that such and such an extra not included in the list of authorized extras might be given; but without his authority it could not be given.

984. Then you got the counter-signature of the principal medical officer?—Yes, then the purveyor would give it; that was the rule made, but I do not think that it ever happened, there were many things so authorized.

985. (*Sir H. K. Storks.*) It had three signatures?—Only two; it would go direct to the superintendent. I do not think that the case ever occurred; it was only done to check the extraordinary orders that were given. I do not think that an application was ever made to me to authorize any extra not upon the list; the list was so ample that it could hardly happen; before that many things were ordered by the medical men that were unnecessary, multiplying infinitely the labour in the establishment.

986. (*President.*) In your opinion an assistant-surgeon's orders should never be allowed to go beyond the diet table authorized without a counter-signature?—Yes, the authorized diet table; but that should be so ample as to meet all ordinary cases.

987. (*Sir Thomas Phillips.*) Including in that extras?—Yes, the authorized list of extras.

988. (*President.*) What scale of diet had you; was it the army diet scale?—The army diet scale was increased; it was not found sufficient in consequence of the inferior quality of the meat, and other circumstances there, and the diet scale was increased.

989. Was the form for the diet roll used as a voucher for the amount?—We had a very simple form, not certainly checking so fully the expenditure as the army plan, but simplifying matters very much, and doing away with a considerable amount of the writing ordinarily necessary.

990. So that it was maintainable in war?—It was maintained there throughout; it was introduced under great pressure. The system worked very fairly. I have some of the printed forms, but they are not here.

991. Will you bring them here on Wednesday?—Yes, I will bring them.

992. (*Sir H. K. Storks.*) Had you the ordinary bed ticket?—Yes.

993. What sort of one?—A large bed ticket, and it showed the name of the man, the regiment, the regimental number, the disease, the diet, and the treatment.

994. So that from the day that a man entered the hospital you could follow the history of his case?—Yes, the whole history.

995. (*President*). You stated that a medical officer with a counter signature ought to be able to exact from the purveyor whatever was requested; you would make him supreme upon the question of diet?—Certainly.

996. What should be the relation of the medical officer to the hospital superintendent; at Smyrna, you had, had you not, army orderlies?—Some.

997. And some of the new staff corps?—No, none of the new staff corps; we had special civil attendants.

998. How did they work?—There was a difficulty at first, many of them exceeded, went out on leave, and got tipsy, and were irregular in their conduct, but the system of fining was adopted, and one or two were dismissed for very gross misconduct, and after that the attendants behaved uncommonly well. I speak now of the civil attendants.

999. Had you any such authority over the orderlies?—None myself, over the military orderlies.

1000. What course did you take if a military orderly behaved ill?—He was referred to the officer commanding, the charge was brought before him, and he dealt with the offender.

1001. Do you think that there is any evil in a medical man not having a direct authority over the hospital attendants?—My feeling has always been that it would be far better to give the medical man in charge of an hospital the power of punishing for minor offences the orderlies employed as hospital attendants in that hospital; but if they required any heavier punishment, that then they should be handed over to the military authorities, and be considered unfit for employment in an hospital.

1002. (*Sir H. K. Storks.*) Had you any medical officer at Smyrna specially charged with the duties of the hospital?—Yes.

1003. What was the nature of his duties?—He had the general superintendence, and the carrying out of instructions which he might receive from me for the detailed arrangements of the hospital throughout the whole establishment.

1004. In fact he looked after the hospital attendants?—Yes, and the nurses, the number of beds, the wards, the arrangements and classification of diseases, and everything throughout.

1005. Did he look after the books and returns?—Yes; he was the administrative officer. He saw no patients; the medical officer who had that was placed on the ordinary staff, and a gentleman who went out as my clerk, Mr. Goolden, took the duty, and carried it out most admirably to the last.

1006. He was a sort of superior house steward or governor, was he not?—Resident medical officer, we called him.

1007. (*President.*) Did you hold him responsible?—It was impossible for me to see everything carried out, but I went round with him. He was my right hand. He was there at all hours of the day and night.

1008. He was responsible for the cleanliness of the wards?—Yes.

1009. Was he responsible that the patients were properly washed?—No, he would hardly do that—that would come more immediately under the medical officer attending the patient.

1010. He was responsible that all the furniture that was down in that list to be given as a matter of course was actually there?—Yes.

1011. Did he see also that the requisitions were properly obeyed?—He could not be acquainted with every requisition, not minor requisitions; as they would not go through him, he could not know.

1012. Would he be the person to whom a patient would complain?—They would complain to him, and they did complain to him.

1013. He would report to you, would he not?—Yes, he would come to me.

1014. (*Sir H. K. Storks.*) He had the charge of the furniture, had he not?—Yes.

1015. He was superintendent of the hospital, in fact?—Yes.

1016. He had nothing to do with the accounts?—No.

1017. Did he issue any money or make any contracts?—No.

1018. (*Sir Thomas Phillips.*) Had you any authority to suspend an orderly who conducted himself improperly in the hospital?—I never exercised any authority over the military orderlies at all, except at times I might reprimand a man.

1019. Suppose a man to misconduct himself grossly, would you have no power to suspend him?—I could put him into the guard-room, and that was done constantly.

1020. With respect to the education of the medical student, you stated that you thought the specialities of the profession should be obtained after he had been admitted?—As a military medical officer.

1021. Would you have that special instruction insured by requiring his attendance, after he had been accepted, at some military school or hospital where proper instruction in the specialities was given, or would you leave it to the chance of his picking it up?—I suppose that some steps should be taken to ensure it.

1022. You would think it desirable that some steps should be taken to ensure that?—Yes.

1023. (*Mr. Martin.*) If he entered the service wanting in such information altogether, he would be obliged to acquire it at the expense of the soldier's health?—As a junior coming in, responsible duties would hardly be entrusted to him before he had had ample opportunity of learning them.

1024. But accidents of the service might put a junior in charge of troops?—I should think that almost every well-educated medical man would have sufficient information on such subjects.

1025. Such as the prevention of disease?—He ought to have.

1026. Is that taught in any of the public schools by any professor in this country?—I am not aware.

1027. (*President.*) Have you seen anything of the working of the Health of Towns Bill?—No; I have been so much out of England.

1028. (*Mr. Martin.*) You know that there is a Public Officer of Health?—Yes.

1029. Is it not generally the case in a military hospital in peace that the average of patients is about thirty medical cases to one surgical case?—I could not say.

1030. (*President.*) What was it at Smyrna?—The proportion was very large indeed. We had not, I think, out of 1700 or 1800 sick, above 60 or 70 surgical cases.

1031. You did not get the same proportion of surgical cases as you would have had if the hospital had been nearer the seat of war?—No.

1032. (*Dr. Sutherland.*) Who attended to the sanitary affairs of the Smyrna hospital, the ventilation, the drainage, and the lime-washing?—I did myself; at least, I gave the directions.

1033. To whom did you make requisitions for anything which might be required?—I had authority to carry them out myself.

1034. You gave instructions to the workmen yourself?—Yes.

1035. And they were carried out without loss of time?—Yes; immediately.

1036. (*President.*) Had you authority to hire labour?—Yes.

1037. (*Dr. Sutherland.*) Suppose you gave instructions for lime-washing, within what time could the operation be commenced?—When I first went there, there was a good deal to do, and we were employing about 60 workmen in the hospital. Often it was not possible to get everything done immediately; but after a time the white-washing of the whole hospital, as you saw it, was done.

1038. The order had to pass through no department?—They went direct from me; I had a civilian foreman of the works.

1039. Do you think that in hospital management it is essential that those things should be done with the least possible delay?—I think so; it appeared to me to facilitate the work very much there.

1040. (*Sir H. K. Storks.*) Were the prescribing medical officers of your staff required to enter the diet and extras in the daily diet-roll?—They were required to enter them upon the bed-head board, not further.

1041. (*Mr. Martin.*) Were they not entered on the case-book?—We had no case-books; we should have had them, and we ought to have had them, but it was not done, because it was impossible, at the time I first went out and found the hospital overcrowded with the sick, to introduce the system of case-books.

1042. (*President.*) Would not the majority of the medical officers use case-books for their own advantage?—Of the *serious* cases, many kept notes; and we had a book kept giving an account of the *post mortem* appearances in fatal cases, which was placed in charge of one particular officer.

1043. Had you any one to whom the pathological inquiry was specially entrusted?—It was so far done, but imperfectly, because the hospital had so very short a time to work; and by that time we had no more sick, it broke up.

1044. The diets were entered upon a board at the bed-head?—Yes.

1045. Who collected those diet-rolls and who totalled them?—They were totalled in the division by the ward-master of the division, not by the prescribing officer, but examined and signed by the senior medical officer or the lady nurse of the division.

1046. To whom did he carry them, to the purveyor?—Then they went to the purveyor; duplicates were made, and one went to the cook.

1047. The diet was the diet of the following day?—Yes.

1048. (*Sir H. K. Storks.*) How did you get the supplies to the hospital; was it through the commissariat, or did the purveyor buy them?—There were commissariat contracts, and the purveyor supplied them.

1049. (*Sir Thomas Phillips.*) Was there any limit to your authority to spend money?—There was no express limit in the hospital for what was required for the sick; anything that I felt necessary I considered I had full power to do immediately.

1050. (*President.*) With regard to anything of which you had doubts and of which you did not like to undertake the responsibility, you applied to the commandant there?—Nothing was ever done without his being acquainted with it.

1051. (*Sir Thomas Phillips.*) I alluded to works.—There was a limit mentioned, such as if new buildings were thought necessary to be erected, they were not to be put up unless the officer commanding concurred with me in considering the step absolutely necessary, or without first obtaining the approval of the Secretary of State for War.

1052. (*President.*) Was not that done in the case of the quarantine buildings?—No; that was erecting buildings; the quarantine buildings I had nothing to do with; it was merely as a barrack, not an hospital.

1053. (*Mr. Stafford.*) Practically, you were never fettered at all by considerations of expense?—I never was in any way fettered by considerations of expense, except that one did not wish to exceed; I reported everything that was done; a return was sent home monthly of the expenses.

1054. (*President.*) You would not have felt justified in incurring any large expense?—No.

1055. Were you supreme over all your medical officers?—I had power to give leave of absence or

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sick leave, up to three months, reporting the circumstances home.

1056. You did not go to the commandant for that?—No; a letter was once received in answer to a report of mine as to sick leave, giving me power to recommend three months' leave of absence for the approval of the commandant; I remonstrated against that, and I received full authority to grant it myself.

1057. (*Mr. Alexander.*) You carried out all the improvements in the sewerage and drainage, did you not?—I had a civilian foreman of the works who understood the matter and who advised me; it was all done by my orders.

1058. Without applying to the commandant?—Yes.

1059. (*President.*) Virtually, you were the governor of the hospital, as well as the chief medical officer?—I suppose I may say so.

1060. (*Mr. Alexander.*) Every one was under you, the orderlies, the steward, and the purveyor?—The purveyor was a military man, and he was under the officer commanding, so far as all matters of discipline were concerned; but in his duties as purveyor he received his requisitions and instructions from me.

1061. (*Sir H. K. Storks.*) How was the washing done at the Smyrna hospital?—It was done by contract at first; we took out washing machines, and they were put up and found to answer uncommonly well; for a very considerable time they were worked by hired labour.

1062. On the establishment?—Yes.

1063. Which answered the best, the contract or the washing machines?—A calculation was made when the hospital was broken up, and the hired labour was found to be so much cheaper that a civilian washerman, a laundryman, was retained specially by Colonel Dickson, who commanded the Swiss legion, in order to continue that plan.

1064. (*Sir Thomas Phillips.*) Was it native labour that you employed?—Yes, Greek labour.

1065. (*President.*) You had female nurses too, had you not?—Yes, and ladies.

1066. Did you find much difficulty arise from the introduction of female nurses?—No, they worked uncommonly well; out of 22 female nurses only one was removed for any misconduct.

1067. (*Sir Thomas Phillips.*) Were they all from England?—Yes.

1068. (*Sir H. K. Storks.*) There were also ladies?—Yes, and a good many were found unfit, from one reason and another, for the work, and several were sent home, and after that those that remained did very well indeed.

1069. (*Sir James Clark.*) Had you a good matron there besides the ladies?—Our matron was not particularly good.

1070. Do you think that the ladies would have been necessary if you had had a good matron?—I think that several of the ladies that we had did the work exceedingly well, and it would have been very difficult to have got a large class of severe cases of fever attended to so well by night and day except by the agency of those ladies, who were thoroughly to be relied on, not only from their superior intelligence, but their devotion to the work; you could not be certain that an orderly would not go to sleep, and a nurse might be gossiping; but in the case of a lady, if you knew that she was there, you might be certain that the men would be attended to.

1071. You think that a small proportion of ladies is useful?—Yes, in serious cases; few are experienced, but they are intelligent, and will carry out the orders given. I do not know that such a vast amount of experience is required.

1072. (*Sir Thomas Phillips.*) You consider the earnest watchfulness of such persons of great utility?—Yes, particularly in severe fever; you may attend a man all the day, but if he is not attended to in the night, you lose more than you gain in the day. We had at one time 200 cases of fever in the Smyrna hospital.

The witness withdrew.

G. Pratt, Esq.

George Pratt, Esq., examined,

1073. (*President.*) Will you state what rank you hold?—That of purveyor to the forces.

1074. What appointment do you now hold?—I am purveyor of Fort Pitt and the district, and many hospitals are in my district.

1075. You have had considerable experience, abroad as well as at home, have you not?—I was in the Peninsula, in Belgium, in France, and in Canada.

1076. Have you been at the head of any other hospital?—I have been at the head of one or two general hospitals in the Peninsula, after one or two battles,

1077. In peace have you been at the head of any other?—No; only at Chatham.

1078. What other general hospitals are there in Great Britain and Ireland?—One at Cork and one in Dublin; there is only one general hospital in England.

1079. Will you state what your duties are at Chatham?—I can hardly define them.

1080. We will take them in heads?—In the first place, I have to provide provisions of every kind for the hospital.

1081. You do the whole duty of the commissariat?—Yes.

1082. Do you provide beef and bread?—Yes, and groceries.

1083. (*Sir H. K. Storks.*) Do you make your own contracts?—There are none. The meat is supplied by a person who supplies it at so much per pound above the supply for the troops of the district.

1084. He has a contract for feeding the troops?—No, it is a different man. The price of bread is governed by the market price in London.

1085. (*President.*) You take it from a contractor, who contracts to supply it at Mark Lane prices?—Yes, that is so, monthly.

1086. You provide the fuel, do you not?—No, the barrack department; the barrack-master.

1087. And wine?—Yes; every description of that kind of provision.

1088. And you provide all the medical provisions?—Everything connected with the diet of the patients, but not medicines.

1089. The system under which you provide at Chatham is different from that which prevails in a general hospital abroad?—Yes. The commissariat, I fancy provide. In the Peninsula the purveyors supplied everything.

1090. In the general hospitals?—Yes.

1091. And in the regimental hospitals?—No; there was a distinction; the commissariat supplied the regimental hospital, and the purveyor supplied the general hospitals.

1092. At present, by the regulations, wine, &c., is provided by the commissariat; but that does not hold good in England?—No; I purchase the wine, &c., for all hospitals in my district; but at present I am issuing from a supply of wine, &c., that came from Turkey, and which was furnished me by order of the Director-General of the Army Medical Department.

1093. During the war, there was a separate mode of purveying for medical comforts? They were bought in London, were they not, by the purveyor attached to the Army Medical Department, and sent out?—Yes, by a gentleman attached to the Army

Medical Department, with respect to the greater portion.

1094. And that was in lieu of trusting it to the Ordnance, which had previously been the practice ?—I believe so. I bought a great deal of the stores that were sent out to the Crimea myself in London under Dr. Smith's directions.

1095. What do you purvey in obedience to warrants, and what do you purvey as a matter of course without requisition ?—Nothing. There is a diet-roll in which the names of the sick are entered, and it contains the extras to be issued. Any other requisition upon an emergency is signed by the ordinary medical officer generally.

1096. If a patient comes into the hospital, do you provide him with bed and bedding and so on ?—There are beds sufficient for the accommodation of the numbers that the hospital will contain.

1097. You are store-keeper as well as purveyor, are you not ?—Yes, within a certain limit. The barrack department furnish the hospital bedding, and I am responsible for it to the barrack-master.

1098. You make indents originally upon the barrack-master for more stores than are required ?—The barrack-master supplies a certain quantity of stores for the hospital; those stores are exchanged twice every week, and taken back, the dirty clothes to the barrack-master, and others are brought. There is always sufficient in hand to accommodate the numbers of patients admitted.

1099. Is there a demand for you to produce out of the store-room beds and bedding made by requisition, or are you informed that there is another patient, and then do you supply what is necessary ?—The ward-masters have always a sufficient store for the accommodation of any sick that come in. Upon an emergency a requisition would be made for any other supplies required by the ward-masters; the whole equipment of the hospital is under their charge, and it is quite sufficient for the men; the hospital will contain on the average 380 men, and the ward-master has sufficient bedding for the accommodation of those men in the hospital. The wards are all complete, and if 100 men were to come in, there are beds for them immediately.

1100. What is the position of the ward-master ?—We have generally had a non-commissioned officer.

1101. Is he a permanent officer there ?—They have been. The last, I think, was 13, or 14, or 15 years there.

1102. Are they still on the books of some regiment ?—No, they are invalids, out-pensioners.

1103. (*Mr. Martin.*) They are servants of the general hospital only ?—Only. In a regimental hospital, men of the regiment are employed.

1104. (*Mr. Alexander.*) To whom are they responsible for the stores ?—To me.

1105. (*Sir Thomas Phillips.*) Is there one ward-master for each ward ?—No, we have only two ward-masters at Fort Pitt.

1106. (*President.*) Everything is done in obedience to requisition, is it not ?—Every extra thing that may be required, out of common usage; a requisition is made for it.

1107. Suppose that upon an emergency there came 20 more patients than the hospital would accommodate, what would you do ? Would the medical officer in that case make a requisition upon you for each article of bedding, utensils, &c.?—The ward-master would come and say, there are so many men coming to-night that I want so much bedding for, and he would get it from the store-keeper.

1108. And he has obtained it from the barrack-master ?—Yes.

1109. Supposing that the store was empty, what would you do ?—Then I would require it from the barrack-master.

1110. Are those indents immediately answered ?—Yes, immediately, if the barrack-master has those things in store.

1111. (*Mr. Martin*). Are you held responsible for the qualities of all the articles supplied ?—Yes; but I should explain that the meat and bread in store are subject to the supervision of a medical officer, there is an orderly medical officer who attends every morning to see the meat brought in, and one patient from every ward attends with the ward-master to see it weighed and to see it put on the scale, and then they take it to the cook-house.

1112. In the event of there being a complaint as to the quality, do you assemble a board of officers ?—No; I should return it to the butcher immediately.

1113. (*President.*) Are you speaking of things that are supplied to you by the barrack-master ?—No.

1114. You make the arrangements for the supply yourself ?—Yes.

1115. Therefore you are responsible for the quality ?—Yes; therefore if it is reported to me that any article is deficient in quality, I look at it, and if I think so, I immediately return it to the contractor; I reject it immediately.

1116. (*Sir H. K. Storks.*) You do so summarily without a board ?—Yes.

1117. (*President.*) Would you obey a requisition for that which by warrant somebody else is bound to supply; suppose a soldier comes in without a kit, would you provide him with a knife and fork and plate ?—Yes; by a requisition being made upon the superintendent of invalids; then I have authority from him to purchase any necessary that may be required, and it is charged against the man, but that is an evil; a general hospital ought to provide for the patients everything that is essential to their comfort, and great difficulty was experienced, especially during the war. A ward-master comes to me with a requisition and says, this man wants a pair of shoes or stockings, but I have no power to purchase them. I immediately send it to Colonel Anderson, the superintendent of the invalid depôt, and then I wait a day or two before I get authority to buy those things, and the man is without knife and fork and spoon.

1118. Do you give him a plate ?—They are provided by the barrack department.

1119. Do they actually provide them ?—Yes.

1120. (*Sir H. K. Storks.*) What kind of plates are they ?—Earthenware; there is a basin and plate provided, and if a patient breaks a plate or basin wilfully, it is charged against him.

1121. (*President.*) In the hospitals in the war those things were not provided?—In the Peninsula we had all those things in store, every essential we had in store; they were very humble wooden trenchers and wooden bowls.

1122. If the purveyor make an indent upon the barrack-master for certain things, plates and so on, and these are not forthcoming, what course does the purveyor take ?—That is a thing which I have not experienced, but I should report it immediately; I have always found, with regard to stores that I wanted, if the barrack-master had them I got them immediately. The plates are sent in by dozens and kept in the store, and if a dozen are broken they are replaced immediately.

1123. In time of war what would you do supposing an article was not forthcoming in England ?—I should immediately report the circumstance to the principal medical officer, saying "These things cannot be got," for the information of the commandant.

1124. The principal medical officer would go to the commandant ?—Then he would send it to the commandant.

1125. What can the commandant do ?—He must call upon the barrack-master to explain, if the articles are usually supplied by him; but if an article is not forthcoming in England, a report to that effect should be made to the War Office.

1126. Must it not be referred to London ?—Yes.

1127. Imagine the case of the hospital at Constantinople, where there is this difficulty, that you have four or five departments, you have the medical

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department, the purveyor's department, the engineer's department, and the barrack department, from whom the purveyor has to get certain articles ; and in every case, if one department fails you must apply again to the fountain head to get redress?—I would get the principal medical officer to authorize me to purchase immediately whatever was necessary for the comfort of the sick. I would purchase it myself. Every officer should do that upon an emergency in the field, such as at Scutari ; I would take the responsibility and purchase anything.

1128. (*Mr. Martin.*) There is no regulation imperative to that extent, is there?—No.

1129. Therefore a man who is timid as to his responsibility, would prefer going without the things to taking that course?—I never would allow any discomfort in the hospital.

1130. Have you ever heard of such a thing as a purveyor being afraid of undertaking the responsibility, and going without the things?—I have heard that was the case at Scutari.

1131. (*Sir H. K. Storks.*) Did you ever know that happen at Chatham?—Never; I have been thirty-six years there, and I have been forty-eight years a purveyor.

1132. (*President.*) Can you furnish the Commissioners with a copy of the instructions under which you act?—I have none ; the only instructions that I act upon are those in the General Hospital Regulations.

1133. A copy has been laid upon the table, of proposed instructions for purveyors ; that is not a substitute, is it, for any existing instructions?—They were printed off from the War Office, and I have had them referred to me.

1134. (*Mr. Martin.*) You hold yourself to be an officer attached to the general hospital service?—Yes.

1135. Does it still hold, that the purveyors supply the general hospitals, while the commissariat supplies the regimental hospitals throughout the army?—I supply the whole of the hospitals in my district, whether general or regimental, without reference to the commissariat.

1136. Is it so still in the British army?—There was a particular arrangement made, I understand, when the staff went out to Turkey, that the commissariat should supply certain articles upon the requisition of the purveyor; but in England, the commissariat never have anything to do with the supplies to the hospitals.

1137. Not to the regimental hospitals?—No ; formerly the medical officers of regiments purchased every article of diet, and extras for their own hospital, but now I supply the regimental hospitals, and have done so for years. During the quarter ending the 30th of September last, when my accounts went into the War Office, I had 46 hospitals under my charge, including the invalid depôt at Chatham, the general hospital at Chatham, the garrison hospital at Chatham, and the large hospital at Woolwich, and my expenditure came to very nearly 12,000*l.*, for three months ; I furnished nearly 200,000 diets during that period.

1138. What was the extent of your district?—It extended to Norwich, Ipswich, and Landguard Fort, down to Dover, and to Windsor, Hounslow, and all round the northern parts.

1139. (*President.*) In the Addenda to the War Office Regulations, there are some instructions to the purveyors, chiefly in the East; were those specially issued for the use of the army at that time?—Yes. I do not consider myself bound by them. I put into my pocket a memorandum, showing the cost of those hospitals I spoke of, per man. The total diets issued in the September quarter were 197,022; the amount of the expenditure was 11,173*l.* 10*s.* 8*d.*; the average expense of the diets, although they were costly in regard to wine and extras, at Chatham, was 1*s.* 1½*d.* per man. The poor men had been wounded, and those things were required.

1140. (*Sir H. K. Storks.*) Do you reckon in that the pay of the Medical Staff Corps?—Yes ; and notwithstanding the greater portion of the hospital servants were men of the Medical Staff Corps, and instead of 4*d.* a day as paid soldier orderlies they received 1*s.* 3*d.* and 2*s.*, the average cost of the patient did not exceed 1*s.* 1½*d.*

1141. (*Sir Thomas Phillips.*) That does not include medicine?—No, food and drink and attendance.

1142. (*Dr. Andrew Smith.*) Have you no instructions?—No.

1143. You have nothing informing you of what you may do on your own authority, and what on the authority or order of the principal medical officer, and what you cannot do without sanction from London?—I cannot do anything without sanction from London. If the principal medical officer gave me an order to buy anything I should refer it to London.

1144. (*Mr. Martin.*) Before it is issued?—No ; if it is urgent I should comply with the principal medical officer's order.

1145. (*President.*) Whom would you refer to in London?—To the Secretary-at-War, the Secretary-of-State.

1146. In point of fact, the chief person who has to decide upon these matters is the Secretary-of-State in London?—Yes.

1147. So that he is virtually the governor of every general hospital in the service?—Yes.

1148. (*Dr. Andrew Smith.*) Did you receive no instructions when you went to Chatham stating what you might do and what you might not do?—Never ; I was sent by the Army Medical Board to Chatham ; I was sent to relieve the purveyor, and all the guidance that I had for instruction was the old general hospital regulations.

1149. (*President.*) You state that if a case was urgent you would obey the requisition, though you would write up to London?—Yes, I should write up to London to say " I have supplied so and so."

1150. Who decides whether it is urgent or not?—The principal medical officer ; I should say to the principal medical officer, " Is this urgently required?" and if he should say " Yes," I should not hesitate any longer.

1151. Who issues the provisions at Chatham?—The steward.

1152. How does he know the amount?—He has a provision ticket, which is an abstract of the diet rolls furnished daily, stating the quantity of provisions required.

1153. Who totals them?—It is the duty of the medical officer who prescribes, and from those diet rolls there is the cook's ticket.

1154. Do you think it is a duty that necessarily devolves upon the medical officer?—I should think that it is very properly delegated to the medical officer.

1155. That is to say that he is the only judge of what diet is suited to a patient?—Yes, nobody but he can decide it.

1156. When he has decided that matter through a whole ward, do you think that the medical officer should total the diet rolls up ; could not a clerk do that?—Yes, but the orders are that those totals of all extras are to be written up in words by the medical officer.

1157. Words there must be?—Yes, in words; if it was not totalled in words I should send it back. I should think that that custom was observed in order that no alteration should take place after the medical officer had prescribed. He puts down one for this diet, and one for another diet, then he adds up the number of diets, then the extras are added up, and he puts them down in words at the end. That I think is very necessary, in order that no alteration may take place in the quantity required without its being detected.

1158. (*President.*) You put upon the medical officer the duty of adding up the pounds of meat, and the number of diets, because you think him more trustworthy than any other person?—If it is objectionable that the medical officer should do it, I should make the ward-master do it, and put his initials to it ; but

the signature of the medical officer would still be required.

1159. Is a daily nominal roll required?—There is a daily diet roll, and every man's name is inserted, opposite to which the extras are put down.

1160. Is that in addition to what is put on his bed?—That is a different thing altogether.

1161. (*Sir James Clark.*) Is every man's diet repeated every day?—His name is carried on every day in a separate diet roll.

1162. Suppose a ward with 18 men in it, he could say there are six men on low diet, seven on high diet, and five on middling diet.—The names are put down every day; the casualties are upon the diet roll every day, and I do not think that the service could go on without it. It leads to the detection of many errors that might otherwise creep in as to the admissions of men and their discharges. I get the morning states from the different hospitals at Chatham of the men admitted or discharged, from which stoppage returns are made, and if an error is discovered the diet rolls are referred to to see when this man was admitted and what diet he was on, or whether he was discharged or died.

1163. (*President.*) Would not the admission book give you the check that you would require?—No, every man who comes into the hospital is entered on the register. The morning states give us the information when he is discharged or dies, which is inserted in the register; and then the diet rolls are the vouchers for the provisions of this man in the hospital.

1164. That is the nominal roll every day?—Yes.

1165. Besides that you have a board at the bed head?—I have nothing to do with that.

1166. But it is so?—It is in the hospital; that I fancy is written out by the ward-master.

1167. (*Sir H. K. Storks.*) When patients are ordered porter, or wine, or spirits, is the medical officer obliged to make any memorandum or remark upon it?—I fancy not.

1168. You never take exception, do you, to large quantities?—Whatever the medical officer puts his name down for is given.

1169. In your abstract of examination you pass it without any remark?—I have no abstract of examination; there is an abstract of examination received from the War Office, but I have none.

1170. (*President.*) Who cooks the rations?—There are cooks in the kitchen.

1171. Who appoints them?—They have been appointed lately from the Medical Staff Corps.

1172. By whom?—A requisition is made upon the officer commanding the corps, and he sends them.

1173. Among the Staff Corps there are a certain number of cooks, are there not?—There have been many sent who have been taught to be cooks. The custom before that was to engage an out-pensioner, who was hired and paid so much a day as a cook.

1174. That is in the permanent general hospital?—Yes.

1175. In a field hospital what would you do?—Then I must depend upon the regiments.

1176. You would tell off so many men as cooks?—The commanding officer would be applied to for so many servants.

1177. (*Sir H. K. Storks.*) There is no allowance, is there, for a cook as hospital servant?—There is a recent War Office letter allowing a cook to be employed in regimental hospitals.

1178. (*President.*) A new regulation?—Yes, within the last month.

1179. By which there is an extra allowance for a cook?—The cook is allowed to be put upon the pay list.

1180. Before that a man was told off?—Yes, one of the orderlies.

1181. Who might or might not be capable of cooking?—If he was not, another man would be put in his place.

1182. If there were three orderlies, and supposing you were entitled to three for the number in the hospital, one of them would be told off to cook?—Yes.

1183. And the chances would be very small as to any of the three men having cooked before?—Yes, that is in a regimental hospital.

1184. Now, by the new regulation, there is a special allowance made?—A cook is allowed to be employed.

1185. Is a man selected now from his knowledge of cooking?—That depends upon the surgeon of the regiment.

1186. (*Mr. Stafford.*) Who selects those men?—I should think the surgeon of the regiment. I suppose the surgeon applies to the commanding officer for a steady man to be cook.

1187. (*President.*) Who supplies the cooking implements?—The barrack-master, upon our requisition.

1188. Who supplies the fuel?—The barrack-master.

1189. Who pays for the carriage of the fuel?—The barrack-master has a store at the hospital.

1190. (*Sir H. K. Storks.*) Do they supply you with anything that you ask for?—They supply saucepans and boilers.

1191. And pudding dishes?—No, those I purchase; I buy gridirons and frying-pans, because the barrack-master's stores will not supply them.

1192. (*President.*) The barrack-master's list is not ample enough?—No.

1193. Supposing it is right that the barrack-master should supply, and that you should not purchase, ought not the barrack-master's list to be enlarged?—Yes, I think so. There is another very essential thing, the barrack-master does not supply the mats for the hospital; he supplies brooms and brushes, but a mat is essential as a broom, and I have been obliged, whenever requisitions have been sent from the regimental hospitals for mats, to refer them to the War Office for authority to purchase them.

1194. Formerly you say that all those supplies were procured not from the barrack-master, but by the purveyor himself?—That is abroad; they were sent out to him from England.

1195. On his requisition?—Immense stores were sent out to two or three places in the Peninsula, Lisbon was one, from which place all things were supplied to the other hospitals.

1196. (*President.*) Do you consider that the purveyor ought to have a list of things which he should supply as a matter of course?—I think that the barrack-master ought to have everything in his store that is essential for the comfort of the sick in the hospital.

1197. Would not it simplify the matter if the purveyor had everything in the hospital?—Perhaps it would. The barrack-master has generally accommodation, but the purveyor has not. At Fort Pitt I have no accommodation for stores; I have a small room, but it is not half large enough.

1198. (*Sir H. K. Storks.*) Have you a store-room for medical comforts?—They are under custody, under lock and key.

1199. Have you a store-room for them?—Yes.

1200. (*President.*) Do you buy them yourself?—Yes; in the ordinary course of things, I should supply everything that the hospital wants.

1201. For everything in the shape of furniture you go to the barrack-master?—Yes.

1202. And for food you go to the commissariat?—The commissariat never supplied food to the general hospitals in England, and they do not now.

1203. You buy the medical comforts, do not you?—I should if I had not any.

1204. (*Sir Thomas Phillips.*) Do you buy the medicine?—That I have nothing to do with.

1205. (*President.*) Is the cooking establishment at Chatham sufficient?—There is no complaint made of it.

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1206. Can you cook in different ways? — The extras are cooked in different ways, such as mutton chops, beef steaks, and puddings.

1207. Have you a kitchen for extras, apart from the general kitchen?—There is but small accommodation. The accommodation for cooking at Fort Pitt has been always deficient, and so it has been in every hospital that I have been in in England for want of proper fire-places.

1208. Have you coppers for boiling?—Yes.

1209. Can you roast?—No; there is an open fire-place, but it is too small.

1210. Can you bake?—There is a small oven.

1211. Could you bake meat?—They could, but it is generally taken up by baked puddings.

1212. The ration is boiled always, is it not?—Yes, invariably.

1213. If variety were wanting, and supposing the medical officer to say that the monotony of living always upon boiled food was bad, are there the means of getting it cooked in any other way?—They might contrive after some time to roast a small piece of meat, but as to roasting large quantities it is out of the question; it is a small range.

1214. (*Sir James Clark.*) In a well-constituted hospital, do you not think that the purveyor ought to have charge of every kind of furniture belonging to the hospital?—It used to be the case, but since the hospitals were turned over to the Ordnance Department, the barrack-master has had everything of the kind under his charge.

1215. Which would be the better plan, in your opinion?—I should say that if there was proper accommodation for the stores, the purveyor should have charge of everything that is required for the comfort of the sick in the hospital, and that he should have nothing to do with the barrack-master.

1216. (*President*). And that you should not have to go to him for anything?—That is my opinion.

1217. Would you have the purveyor supply those things himself, or get them from the barrack-master and keep them in store?—If the purveyor were independent of the barrack-master, the things would be supplied to the purveyor by the government, and he would have nothing to do with the barrack-master.

1218. At present you are responsible for the care and management and issue of those stores?—At present I am responsible to the barrack-master.

1219. (*Sir H. K. Storks.*) You mean that you are responsible for those that you receive from the barrack-master?—Yes.

1220. (*President.*) In the wards, who is responsible that the articles of furniture are not ill-treated?—The ward-master is responsible to me for the things in the wards, and he has to report to me so soon as he discovers the loss of any articles.

1221. Is he your servant?—He is the servant of the public and the servant of the hospital.

1222. He is not under your authority as your clerks are?—No, not at all.

1223. Is there one in one or two wards?—No; there are two ward-masters for the whole of Fort Pitt hospital.

1224. (*Sir Thomas Phillips.*) Under whose authority are they?—The surgeons of divisions or the principal medical officer.

1225. Who employs the ward-masters or dismisses them?—The principal medical officer.

1226. Who pays them?—I pay them.

1227. (*President.*) Do you issue the pay?—Yes, I pay the whole, because they belong to the establishment.

1228. How is the washing done at Chatham?—The bedding is done by the barrack-master by contract. As to the personal linen, such as shirts and stockings, that is done in the washhouse at Fort Pitt.

1229. Is there a laundry attached to the building?—Yes, a very convenient one; it has not been many years erected.

1230. Is that washing done by contract?—No, I hire men; I have three or four men and a woman.

1231. At what rate will they do it?—Two men receive 10*d.* per diem, one man 4*d.*, one 7*d.*, and the woman 1*s.* 1*d.*, each receiving a ration.

1232. Is that cheaper than by contract?—I think so; the washing costs a little better than a penny a week, per man.

1233. Do you use a machine?—Yes, I have one that I invented some years ago, and I have found great use from it, and I sent some of them out to Scutari.

1234. Do you use wringing machines?—No.

1235. Have you a hot closet?—There is a hot closet there, and a very good one.

1236. That saves a good deal of labour, does it not?—Yes, it saves drying in winter and is very convenient.

1237. (*Mr. Stafford.*) Do you ever fumigate the wards or the linen?—That depends upon the medical officer of the wards.

1238. He orders it, does he?—When it is necessary; the medical officer must give those orders, I have nothing to do with the interior of the wards.

1239. I speak of the linen or the blankets?—That is never necessary.

1240. (*Sir H. K. Storks.*) How do you get the articles necessary for whitewashing?—By requisition to the barrack-master.

1241. And that requisition must be countersigned by the principal medical officer, must it not?—He tells me that it is necessary to whitewash the hospital, and I make a requisition on the barrack department.

1242. (*President.*) If you have a requisition as to repairs I suppose the principal medical officer would call your attention to the deficient state of the roof, for example, and what would be the process, would he bring the requisition to you?—He would send me a memorandum. There is a requisition made every week upon the barrack-master for broken glass or anything of that sort. Then the barrack-master brings this requisition to the engineer's department, and the royal engineer's department by-and-bye effects the repairs.

1243. (*Sir James Clark.*) Supposing that he discovered a leak, what would he do?—Then I should make an immediate requisition, "Roof to be repaired, as it leaks into such a ward."

1244. And would they attend to it?—Yes, immediately.

1245. It would not go to London, then?—No.

1246. (*Sir Thomas Phillips.*) You stated that you thought it would be more convenient that the government should supply whatever was required for the hospital, than that the barrack-master should do it?—I do not see why it should go through the barrack-master.

1247. What do you mean by the government?—A functionary in London—that the War Office should give directions to the Tower.

1248. So that it would be directed to another department rather than to the barrack department?—Yes, to supply me with a certain number of stores necessary for the comfort of the sick at Fort Pitt.

1249. (*President.*) The principal medical officer comes to the purveyor and states that certain repairs are wanted. The purveyor goes to the barrack-master, the barrack-master applies to the engineer, and the engineer, I suppose, applies to Pall-mall?—No, I suppose he has a discretionary power, unless the repair is of very large extent.

1250. Would not it be referred to the commandant to know whether it was necessary to make it, I mean a thing of some cost?—There is a yearly account required for the repairs and alterations necessary, and that goes up with the yearly estimate.

1251. Abroad it would go to the commandant?—The commandant calls upon the heads of departments to give an estimate of what repairs they will require during the next year.

1252. But supposing some accident took place abroad, it would be necessary that it should be referred to the officer commanding the district to have his opinion?—I do not know the custom abroad.

1253. Did you ever know of cases where matters have been referred home which might have been done and ought to have been done by a reference to the superior officer?—That never took place in the Peninsula.

1254. I mean in peace?—I know nothing about it. I have never been in a general hospital abroad in peace.

1255. In all those cases for internal fittings, repairs, drainage, ventilation, alterations in the sinks, and so on, you would have recourse to the process which you have described?—Yes; that is the one.

1256. Do you think that it is as short, as rapid, and as efficient as it might be made?—I think that the hospital establishment ought to be very good judges; the officers ought to be good judges of what was required, and I think that they ought to be trusted as to the outlay.

1257. Do not you think that, in case of a dispute between the different authorities as to whether a thing was necessary, there ought to be on the spot some person to decide at once?—I think that the officer commanding the district would be the proper authority.

1258. Have you nobody in the hospital like a governor, who could decide upon a thing and do it?—No.

1259. With regard to lime-washing and cleansing, that stands in the same way, does it not, on application to the barrack-master?—Yes; all repairs.

1260. You have stated that you never fumigate?—It is never necessary; we change the bedding twice a week.

1261. In the case of washing linen, it is not necessary to fumigate likewise?—Never.

1262. Mr. Dartnell, in his examination before the House of Commons last year, on the Medical Department of the army, was asked, "What do you do in "the case of linen, either bed linen or personal linen, "that has been used during an infectious disorder?" to which he replied,—"If it is a straw bed, it is "destroyed, and articles of clothing are fumigated "and washed." He was then asked,—"Who sees to "the fumigation?" and he answered, —"They are "handed over to the purveyor." Is that correct?—I have never had anything to do with it. I never knew of any fumigation.

1263. He was then asked,—"Is there any means of "knowing medically whether they have been suffi-"ciently fumigated?" and his reply was,—"No; I "think not." Do you think that that is not an accurate description?—I have been a great many years there, and I never found it necessary to fumigate any bedding. There were cases of cholera some years ago, and then the bedding was burnt.

1264. You are the paymaster of the hospital, are you not?—Yes; I pay all the bills under authority.

1265. Do you issue the pay of all the officers?—No; they are paid by the general agent.

1266. Do you pay any of the servants of the hospital?—Yes.

1267. But not the medical officers?—No.

1268. And you pay no commissioned officers?—No.

1269. Do you issue pay to the patients?—No; I have nothing to do with them.

1270. You keep an account of their stoppages, do you not?—Yes; I keep accounts of the stoppages due to the hospital, which are sent to the paymasters in whose payment the men are.

1271. And the patient gets the balance of his pay when he returns to his regiment?—Yes.

1272. In the case of a man in the invalid hospital discharged from the service, how is the balance of his pay made up?—The paymaster of the invalid depôt settles with him.

1273. (*Sir H. K. Storks.*) Do you take the men's packs?—Yes, we have a pack-store and a pack-store-keeper.

1274. You also retain possession of any money that they may have, do you not?—Yes, all property—their watches, &c.

1275. (*President.*) Your impression is, that when his kit comes into store, it should not be used for him in the hospital, but that you should supply everything?—I think that the government should supply shirts, stockings, spoons and forks, and everything that is necessary for him in the hospital; that used to be the case.

1276. And you think that these should be in the store?—Yes.

1277. (*Sir Thomas Phillips.*) Why was the alteration made?—I do not know.

1278. (*President.*) That was always the case, you say, in the general hospital?—Yes; when a man came into the hospital his whole kit was put by in the store, and everything was issued to him when he came out of the bath. In the regimental hospitals I fancy that they used their own shirts and their own knives and forks. There is no difficulty there; but in the general hospital men come in there at all times, and they may lose their knives, forks, and spoons. I have known them come without a shirt.

1279. There would be a difficulty with a regimental hospital in the field, in moving so much baggage as would be necessary to provide them with those things?—There would be; it has been attended with the greatest possible inconvenience, the men having their kits to be supplied from, if a man's kit is put into store, and he witnesses the registering of the articles in his pack, if he wants a shirt or a pair of stockings, he applies to the ward-master. Then there is generally obliged to be a requisition for those things from the man's pack; and the packs have to be opened, and the man would say, "It has been opened since it was registered; there ought to be so and so in the pack."

1280. Who is responsible for the cleanliness of the wards?—The medical officer.

1281. But practically, who is responsible?—The medical officer has a ward-master under him, and the orderly has to see that the wards are kept clean.

1282. Who is responsible for the cleanliness of the patients?—The ward-master.

1283. What means are there for washing at Chatham?—Lately there has been an ablution room fitted up; before they used to go to the pump.

1284. How do those men manage who are not well enough to go to the ablution room?—Then they have a hand-basin.

1285. Have you basins supplied?—Yes, by the barrack-master.

1286. And towels?—Yes, for the use of the ward.

1287. What kind of towels?—There are round towels, but there are no hand-towels; the hand-towels I purchase; and there is an anomaly again, for it is not in the barrack-master's list.

1288. (*Sir H. K. Storks.*) Who is responsible for the cleanliness and the sanitary condition of the outside of the hospital and the hospital yard?—The purveyor is responsible for all the exterior and the medical officer for the interior.

1289. (*Dr. Andrew Smith.*) Would it be practicable to ensure the sick having their dinners and breakfasts in proper time provided the diets were to be marked upon the day that they are to be used?—I think not. My steward is up at four and five o'clock in the morning preparing those diets for the kitchen.

1290. Could no means be provided for that to be done?—I do not think so.

1291. (*President.*) What is the hour of dinner now?—One o'clock.

1292. When do the medical officers come round?—They go at this time of the year at 9 o'clock.

1293. There would be no possibility for the purveyor procuring the quantity of meat and the cook cooking it in time for dinner after that period; not even if the medical officers went round earlier?—I think not. I think that the steward should prepare the night before for the issue of diets in the morning.

1294. (*Dr. Andrew Smith.*) How far can you interfere in regard to hospital expenditure? Supposing

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that you go to one of the outstations, or that the diet-rolls arrive from some outstation and you see in them something which appears to you to be extravagant in quantity or in quality, how far can you interfere?—All I can say is, that if I saw anything very extravagant I should write to the medical officer about it.

1295. Supposing that he paid no attention to your representation, what would you do?—If it was very glaring, I should refer it to the War Office.

1296. Not to the principal medical officer at Chatham?—He has nothing to do with it. I would ask his opinion, and if he concurred with me I should immediately report it to the Secretary-at-War for instructions.

1297. (*Sir Thomas Phillips.*) You would obey his requisition in the first place, would you not?—The requisition has been obeyed.

1298. What means has a patient in the hospital of ascertaining the diet he is on and the extras which are ordered for him?—There is a patient from every ward who accompanies the ward-master to the steward's store every morning, and he witnesses and is present during the time that every article is weighed. Then those articles are put into trays and taken in the custody of the assistant ward-master with the patients to the cook-house.

1299. How does a patient in the hospital who does not go to see, know what is his diet: suppose a man is in bed?—I fancy that the diet-roll remains in the ward.

1300. (*Sir H. K. Storks.*) With regard to extravagant extras, do you think that you can be a competent judge of what is necessary for a patient?—No.

1301. You do not think that you could form a correct opinion of what was necessary for a patient?—No. I have no opinion on the matter.

1302. (*Sir Thomas Phillips.*) Supposing bottled porter were ordered, as your supply is limited to draught porter, would you then say that you thought it was costly?—Some time ago an order was given, that when the medical officers prescribed bottled porter, they should explain how it came to be prescribed, it being considered that draught porter was quite sufficient for the cases.

1303. You would require explanation in such cases as that?—I did not require it, but the War Office required it.

1304. (*Dr. Andrew Smith.*) Can an assistant-surgeon in charge of a detachment in your district order mutton to be provided for the ordinary diet, and not simply as an extra for the sick, instead of beef?—Then he should have mutton.

1305. Can he order it?—Yes, they have power to order anything they choose. If an assistant-surgeon wanted mutton, he could get it. Beef and mutton are supplied for the diets alternately; there is so much mutton and so much beef.

1306. (*Sir Thomas Phillips.*) Do you mean that in the diet itself, the alternative is given to him to order either mutton or beef?—Yes, if he chooses.

1307. (*President.*) Do not you furnish confidential reports to the War Office?—Not now, I have never furnished any.

1308. Do you superintend the packing and unpacking of all the stores that are received belonging to your department?—We have very little of that kind. If I had a large quantity of stores to be unpacked, I should see it done myself, or send my chief clerk.

1309. (*Sir H. K. Storks.*) Supposing that you want transport, what do you do then?—I have authority to hire transport. We have waggons and carts, and I can hire horses.

1310. (*President.*) So far as transport is concerned, you have a sufficient establishment?—Yes.

1311. And you are entirely independent in that respect?—I state to the War Office that it is necessary that so and so shall be provided.

1312. In England you are independent as to transport?—Yes.

1313. You are also independent as to the supplies of rations?—Yes.

1314. You are independent as to medical comforts; and you are independent as to such furniture as is necessary for you, but which the barrack-masters do not habitually provide you with?—That is the case. If anything very essential is required in addition to his supply, it is only necessary to refer it to the War Office to get authority for buying it.

1315. That distinction as to the barrack-master's department is entirely an arbitrary one, is it not?—Yes, entirely.

1316. There is no reason, is there, why he should supply one thing and you the other?—No; I see none.

1317. (*Sir H. K. Storks.*) Do you get supplied by advertising for tenders?—No; the settled price of meat for the troops governs my price for the hospital. I pay a halfpenny a pound above the district price paid for the troops; and as long as the man serves us satisfactorily, he is kept on and he supplies it.

1318. (*Sir Thomas Phillips.*) He is not necessarily the man who supplies the troops?—No; but sometimes in a district the contractor for the troops supplies the hospital.

1319. (*President.*) I see that it is your duty to prepare all wills for patients, do you keep a register of them?—Yes.

1320. And you make all the necessary funeral arrangements, do you not?—All the necessary funeral arrangements are made and I defray the expenses, which are repaid to me by the paymasters of the different corps.

1321. (*Sir H. K. Storks.*) Do you keep any defaulters' book?—No.

1322. Not even of the hospital servants?—No.

1323. And do you make no entry of misconduct?—No.

1324. (*President.*) If misconduct happens, what do you do?—When soldiers were employed they were dismissed to their regiments if it was necessary. Those medical staff men that we have now are sent away from the hospital.

1325. Who keeps the default book?—There is none kept. [I find upon inquiry that the principal medical officer has ordered the chief ward-master to open a defaulters' book for the servants of the hospitals.—George Pratt.]

1326. (*Sir H. K. Storks.*) Is there no entry kept of their crimes?—They are sent with a report of their crimes to the commanding officer of the depôt.

1327. Supposing that a soldier commits any crime in the hospital, do you keep an account of his default?—I never did.

1328. (*President.*) There is a military officer in charge, is not there?—The commandant there used to be a superintendent of hospitals.

1329. There is a default book kept in a regimental hospital, is there not?—I fancy so.

1330. Can you account for that different practice?—No.

1331. Is it not just as necessary that it should be kept in a general hospital?—When we got out-pensioners for servants it was not necessary to keep a default book; they were dismissed immediately if they were guilty of anything. When the depôt men were sent away if they had committed any crime, an account of the crime was sent with them to the officer commanding.

1332. Do you think that the hospital would be more efficiently served if the independent power which you have as to some articles were extended to all articles; for example, if you were your own commissariat and barrack-master?—I have stated before that the purveyor could supply if the stores were put into his charge, and be independent of the barrack-master.

1333. Upon the whole, would the service be promoted by it?—I think it would; because, for instance, complaints are made very often of the bad washing in the barrack department; and if the purveyor washed the articles, I dare say he would contrive to do it better.

1334. He would have a greater interest, being the person to issue those things, than the barrack-master who is in another department, and who probably does not hear the complaints ?—Yes, it would give a great deal of additional trouble, especially to the purveyor, but I think it would be better for the service if that plan were adopted.

1335. It would save you some trouble too, would it not ?—Yes.

1336. (*Sir Thomas Phillips.*) There must be some depôt whether in the barrack-master's department or otherwise ?—There must be some stores.

1337. (*President.*) You would require additional store room, would you not ?—Yes.

1338. (*Sir H. K. Storks.*) Have you any inspection of the hospitals monthly or weekly, in order to find out deficiencies ?—The ward-master is responsible to me.

1339. Is there any inspection as to the number of beds and blankets ?—That is generally done yearly. I am not responsible. I am responsible to the barrack-master for the stores that he gives me, and if there is any deficiency in my stores I make it good to the barrack-master.

1340. (*Sir Thomas Phillips.*)—And the ward-master to you ?—Yes.

1341. (*Mr. Alexander.*) Does the circumstance of the barrack-master holding your stores occasionally cause delay ?—No.

1342. If sickness broke out, and you wanted to fit up another hospital, and you had not stores in your possession, you could not get the articles, could you, beyond a certain hour in the evening ?—No. During the time that we received such numbers of sick from the Crimea I never found any difficulty in getting what stores I required from the barrack-master.

1343. (*Mr. Stafford.*) Is your position as purveyor satisfactory with regard to the position of the principal medical officer, or do you propose any change in your relative positions that would be more satisfactory ?—I have never found any difficulty in carrying on my duty with the principal medical officer.

1344. (*Sir Thomas Phillips.*) There has been no conflict of authority ?—No.

1345. (*Mr. Martin.*) Is your duty well defined ?—I think so.

1346. (*Dr. Andrew Smith.*) Have any alterations been lately made as far as regards the cesspools at Fort Pitt ?—No.

1347. Are they bad ?—Very. I have been trying for 20 years to get drains at the back of the hospital.

1348. Whom have you applied to ?—To the barrack-master and at quarterly inspections ; there is no drainage.

1349. (*Sir H. K. Storks.*) Who makes the inspection ?—The barrack-master and the engineer, monthly, and quarterly.

1350. Do you attend those inspections ?—Generally ; but if requested by the barrack-master I am bound to attend.

1351. Have you pointed out those deficiencies ?—I have repeatedly done so.

1352. (*President.*) Are those deficiencies very great ?—There is no drainage to the privies, and two or three times these have had to be opened close to the cook-house.

1353. Is the smell very bad ?—Horrible. I have known the emptying of those privies kept on for ten days or a fortnight.

1354. Was the health of the hospital affected ?—That I cannot speak to.

1355. (*Mr. Alexander.*) Is there no charcoal used for deodorization ?—That is often put in.

1356. (*President.*) What answers do you get to your applications ?—They have been pointed out at the quarterly inspections. I do not know that I have made any written applications. The other day an alteration was effected. For several years I had been pointing out the state of the drainage. The rats came up from the drains, and they used to burrow underneath the necessaries, and run about the yard at night. I asked to have gratings put down at the mouths of those drains to prevent the rats coming any further, and after several years it was done about a fortnight or three weeks ago.

1357. Where is the failure in those representations ; where does the stoppage take place ?—I do not know that.

1358. To whom did you point it out ?—To the barrack-master.

1359. Does he enter it, and report it to the engineer ?—They generally put it down, they make notes ; but why they are not carried out I do not know. I mentioned again about a month ago that those things were necessary ; I said, " I beg to draw your attention to this, it is a very simple thing ;" and the barrack-master said that it should be done. It was done, and since that I have seen no more rats.

1360. But the more serious defect, that with regard to the privies, has never been remedied ?—No ; it would take an immense expense to carry out this drain. There are two ranges of privies, one on each side of the kitchen, and once or twice every year they are obliged to be opened and emptied, and the soil carried away in carts.

1361. The next time the barrack-master comes then you point it out again ; does he give any reason why it cannot be done ?—The expense and the difficulty.

1362. (*Sir Thomas Phillips.*) You used the expression, " immense expense ;" what do you mean by that ?—An immense drain must be made to carry it off to the river. I should say between five and six hundred yards in length.

1363. (*President.*) What would be the probable cost ; would it amount to 10,000*l.* ?—No, not so much as that.

1364. Five thousand pounds ?—There would be immense drainage required ; you must carry it under the street.

1365. (*Sir H. K. Storks.*) Is the hospital at Fort Pitt well ventilated ?—Very. I was never in a hospital so sweet and free from any bad smell.

1366. Are the casemates well ventilated ?—Yes, very well. There is thorough ventilation in them.

1367. (*Sir James Clark.*) Are not those privies near the wards as well as near the kitchen ?—There is a yard between the hospital and the privies, it is about the width of this room.

1368. (*Sir H. K. Storks.*) Do you know how many cubic feet of air each patient has in the hospital ?—No.

1369. (*President.*) Whose business would it be to know that ?—The medical officer's.

1370. If he complained to you that the wards were over crowded, could you find any remedy ?—The medical officer can take upon himself to order so many beds to be taken out of a ward.

1371. Suppose that one ward was empty, and another seemed crowded, but was still within the regulation, what would he do ?—Then the medical officer has only to take the patients out of the one ward and put them into the other.

1372. Would it not depend upon the barrack-master issuing food and light ?—No.

1373. (*Mr. Alexander.*) Are not the number of patients marked off on the door in each ward ?—No ; the barrack-master has a scale of the number of patients that the hospital will hold, and it is nothing to him where the patients are put.

1374. (*Dr. Sutherland.*) How often are the wards limewashed ; is there any regulation as to that ?—Once a year, or oftener if necessary. It all depends upon the medical officer.

1375. (*Dr. Andrew Smith.*) What is that high chimney immediately outside the Fort Pitt gate ?—It was to carry off the horrible smell from the privies when the men inhabited the casemates ; that is the shaft, but much to the annoyance of the people who go past. It ventilates a series of dark privies below ; and I can assure the Commissioners that I have been

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down there, and I have almost fainted from the horrible smell. It has drawn tears from my eyes, worse than any hartshorn bottle that I ever put to my nose. This was for the relief of the people in the casemates, but to the detriment of the public. When the wind is in a particular direction I can smell it for a quarter of a mile.

1376. What distance do you consider the shaft to be from the general hospital of Fort Pitt?—About 20 yards from the casemate and 100 from the general hospital.

1377. Could you never perceive the effluvia when the wind was blowing in a certain direction?—I have smelt it on the parade.

1378. (*Dr. Sutherland.*) Have you ever been in the hospital early in the morning?—Yes.

1379. What is the state of the air in the casemates then?—It is very sweet.

1380. Is it always sweet in the morning?—You have that monster shaft belching out.

1381. (*Dr. Andrew Smith.*) Are you aware that the hospital at Fort Pitt now requires painting inside?—Yes, it has not been painted, the time has not come round yet.

1382. What is the time?—Once in so many years, six or seven.

1383. Are you aware that that has been represented several times of late?—Yes; Mr. Taylor told me that he had been unsuccessful in his application. He wanted the inside of the cupboards painted, and I think an arrangement was made with the barrack-master; he thought that he could effect some of the parts that required lime-washing himself, and by so doing he thought that he could paint the inside of the cupboards.

1384. (*President.*) That is, I suppose, calculated sufficiently to preserve the woodwork?—Yes, exactly; they do not look after the health, but the woodwork they look to.

1385. (*Dr. Andrew Smith.*) Will you furnish the Commission with a list of all that you consider necessary for the full equipment of a hospital able to accommodate 200 sick, viz.: furniture, bedding, utensils, and personal clothing for the sick?—Yes.

The witness withdrew.

Robert John Hill, Esq.

ROBERT JOHN HILL, Esq., examined.

1386. (*President.*) You are governor of the London hospital?—Yes.

1387. You were formerly in the army?—Yes, not very long, for about eight years.

1388. Have you any acquaintance with the system of army hospitals?—Nothing more than any gentleman would have who had occasionally visited them.

1389. How long have you been at the London hospital?—Upwards of fifteen years.

1390. Is it a very large hospital?—Yes, one of the largest in London.

1391. Containing what number of beds?—About 340 patients at all times.

1392. There is a committee of management, I presume?—Yes, a house committee.

1393. Will you describe to the Commissioners what the duties are which you perform as governor of the hospital?—I have the general superintendence of the hospital; the interior arrangement and economy of the hospital. In the absence of the house committee I represent the committee; I look to the discipline, and have the entire control of the officers.

1394. What staff have you under you?—The resident staff consists of a resident medical officer, and an assistant medical officer. We have two house surgeons, two dressers, and three dispensers; there is also a resident accoucheur, a matron, and two clerks.

1395. One of those clerks is virtually steward, is he not?—Yes, the first clerk.

1396. And purveyor for the hospital?—He is not exactly the purveyor, but he examines all the provisions that are brought in, and sees that they are of good quality.

1397. Does he contract for them?—No, the house committee contracts.

1398. Is it done by tender, and is the lowest tender taken?—It is given to the lowest tender. Various butchers and other tradesmen send in their contracts.

1399. It is not an open contract, is it?—We do advertize, but we send to a certain number of tradesmen, four or five butchers and four or five bakers.

1400. What is the division of the duties; take the duties of the medical officers. Have they anything to do with the administration of the hospital?—Nothing whatever.

1401. But they have the entire management of the medical departments?—They attend to their professional duties only.

1402. (*Sir James Clark.*) Are all of those resident?—No. I am alluding now to the physicians and surgeons and assistant physicians and assistant surgeons.

1403. (*President.*) What other medical officers have you?—Three physicians, three surgeons, three assistant physicians, and three assistant surgeons, and an obstetric physician.

1404. All of them are entirely confined to their peculiar duties?—Entirely.

1405. Do they exercise any supervision over the servants of the hospital in any way?—None. If they saw anything wrong in the conduct of the nurses, they would make a complaint.

1406. Or if the provisions were bad?—They might, but they are not there at meal times; the dinners are over when they come to the hospital.

1407. To whom would they make any complaint? They would make it, if it were not of any great importance, perhaps to the matron, and if it were of more importance they would probably come in to me.

1408. You say that the hospital is provisioned by contract, the contracts being made by the committee of management?—Yes.

1409. Who practically manages the provisioning of the hospital? who receives the meat, and examines the quality of it?—The first clerk.

1410. Would he have the power of rejecting bad meat?—Yes, undoubtedly.

1411. Does he supply the medical comforts also?—No.

1412. Who does?—They come from the dispensary, and we do so because it is more convenient. Arrow-root and things of that sort may be wanted at any hour of the day or night.

1413. (*Mr. Martin.*) You consider such articles as half diet and half medicine, do you not?—They are not diet at all; the dispensary is always accessible, day and night.

1414. (*President.*) The ordinary diets are entirely provided by the steward?—Yes.

1415. And extras?—Yes, except wine, spirits, &c.

1416. Are the medical comforts not extras?—No.

1417. Have you got the forms which show how your different diets are composed?—There is, for instance, a form, which hangs at the head of the bed of the patient, a ticket on which the medicines and diets are entered by the surgeon or physician under whose care the patient is (*the same being handed in.*) I have brought some diet-rolls here. This is the scale of the diets at the London Hospital (*the same being handed in*). I have also cut out some old pages out of our diet-books, to show how it is done; how we order meat for each day. This is for the 6th of July 1855, and these were the diets, and the extra diets (*the same being handed in*). Here is a

page corresponding with it in the cook's book (*handing in the same*).

1418. Will you describe how the diet-rolls get into the hands of the cook from the clerk?—After the surgeons and physicians leave the hospital, at 3 o'clock, a bell rings, and the nurses then go down to the dispensary to settle their books and their diets, and the first dispenser's duty is to see to that; and if any change takes place, the nurses take down those tickets that show that a change is ordered, if not, it goes on one day like another. These books are made up for the regular and the extra diets, they are not totalled, but he puts the number along, and then it is sent to the office to the clerk, and he totals them, and calculates from that total the quantity of meat he wants from the butcher, and he also makes out from that list the cook's book, showing how much meat she will have to receive the next morning, and how she is to dispose of it. Here is a corresponding page in the butcher's book for those diets (*producing the same*). I extracted them to show how the calculation was arrived at. In these calculations we make a very liberal allowance; there are a great many diets to cut and serve out in the ward, and we allow a good supply of extra meat to balance that, it is done in the presence of the patients in the wards.

1419. Do you make a fixed allowance for waste in cooking?—Yes.

1420. What is it?—It is more than a third; we allow a third for waste in cooking, and we make an allowance for carving; this calculation is for beef, and we allow an ounce, for every diet in carving, for bone and for fat in mutton.

1421. (*Sir Thomas Phillips.*) The dietary is for cooked meat, is it not?—Yes; these pages are all connected one with the other, and they show the whole.

1422. (*President.*) These allowances you have found, I presume, to be about that which is necessary?—Yes; and we find it answer perfectly well; the meat sometimes may be a little overdone, but generally speaking it works admirably.

1423. How do you provide furniture at your hospital?—We have an upholsterer who supplies that.

1424. (*Sir Thomas Phillips.*) You have referred to the waste in meat; suppose the diet to be eight ounces, what extra amount of meat do you allow?—We allow more than a third more.

1425. Does the upholsterer supply beds, &c.?—Yes; it is an old hospital, and has been so long established, that the furniture is all perfect; there are repairs of bedding now and then.

1426. Do you order it?—Anything that is wanted is made out in a weekly order-book; during the week they submit many things to me; the matron comes and says "I want so much linen for new sheets, or "100 pair of blankets, shall I put them in my order-"book?" I say "Yes;" and it is then entered in the order-book, and laid before the committee. I sign it first, and the chairman signs it and approves it.

1427. (*President.*) Practically, the committee are obliged to defer to your judgment?—Yes; then the next day the different departments write out their orders and leave them on my desk to sign, the orders then go to the tradesmen; there is a blank form from the weekly order-book, with also a blank leaf of the tradesmen's order book (*producing the same*); I have also cut out from some of our old books the orders for the 23rd March 1852, and the Commissioners will see the various things entered in the order-book, and here I have the counterfoils, or the parts that we retain, showing that those orders were all sent.

1428. Your signature is the warrant to the tradesmen for the supply?—Yes; he will supply nothing without my signature; at the end of the quarter we write to the tradesmen for their bills, and then they send back my orders for every article sent in during the quarter, and an invoice is sent which is signed by the dispenser or matron, and that is security to me that they have received them, and that they are of the right quality; the accounts are then sent in and checked by the clerk through these three different things, his own counterfoil, the invoice, and the order, he has three things to check them by; in 21 days he is bound to have his quarterly accounts ready to submit to the committee, he then sends his balance sheet in and his accounts to the committee, and the committee direct the secretary to call upon the committee of accounts to look into those accounts and report, the warrant is then signed for the treasurer, and then he pays the amount to the tradesmen in cheques, and that ends the whole affair.

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1429. The treasurer will pay nothing without that general warrant?—No; he must get a warrant for every sum that he pays in a cheque, invariably, which is signed also by the secretary.

1430. There is a governor, a treasurer, and a secretary; and you have two clerks, one of whom acts as steward?—Yes; that is the whole staff.

1431. (*Sir Thomas Phillips.*) Is the treasurer your banker?—No; he is one of the governors; he has generally been chairman, and the next post he takes is treasurer. The drugs are ordered generally quarterly, as is shown by this page (*handing in the same*). There is a drug committee, and these are signed by the chairman on the other side. The orders are sent to me and I sign them.

1432. (*President.*) Where do you get your drugs? At various places.

1433. Who is responsible for the safe custody of the furniture when it is provided?—The nurse is answerable for all the furniture in her own ward, she has a very large store under her charge; she has probably 300 blankets, at least some of them have; they are all dated and numbered; the matron sees them once a quarter, and she is responsible.

1434. Is she responsible for the cleanliness of the ward?—Yes.

1435. Is she also responsible that the patients are kept clean?—Yes.

1436. What means have you for ablutions?—We have baths in all directions.

1437. Have you some that can be brought to the bedsides of the patients?—Yes; each ward has its own establishment of baths, and we have also lavatories.

1438. But for the bed-ridden patients how do you manage?—The baths can be brought to their bedside, or they can be wheeled in chairs to the baths.

1439. Have they basins and jugs, and things of that kind?—Abundance.

1440. How is the washing done?—In the laundry.

1441. Does it answer better than by contract?—Yes, it is cheaper.

1442. Have you tried both?—No, but I know what other hospitals do, and it is better done with us.

1443. Do you ever fumigate besides washing?—Not much. If any clothes are reported as being doubtful as to vermin, they are fumigated before they are sent to the laundry.

1444. But not as a precaution against infection?—No.

1445. (*Sir Thomas Phillips.*) What is the annual cost of the washing of 350 patients?—It is about 1*l.* a head, but the washing at the London hospital is different from other hospitals, inasmuch as we wash for all the establishment, all the resident officers, and a great proportion of the female servants. I think in the inner laundry there are 1,100 pieces washed weekly including gowns.

1446. (*President.*) Do you wash for the nurses?—No.

1447. (*Sir H. K. Storks.*) How many nurses have you?—Eight head nurses; nine indeed, for we have a supernumerary nurse.

1448. (*President.*) Who appoints the nurses?—The matron hires them subject to my approval, and then she reports to the committee that she has done so.

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1449. How much do you pay them?—The head nurses get 37 guineas, and 35 guineas. The nurses in the men's wards get the largest amount.

1450. And rations?—Everything is found.

1451. (*Sir H. K. Storks.*) What do the under nurses receive?—Eighteen guineas.

1452. How many have you?—34 assistant nurses.

1453. (*Sir James Clark.*) How many nurses have you altogether?—We have nine head nurses, and 34 assistant nurses; we have, I think, 17 night nurses.

1454. (*President.*) What do you pay them?—Half a guinea a week, but they have no work to do, they live out; I am sorry to say there is no room for them to reside in the house; they merely come to sit in the ward; they have no scrubbing in the wards at night. We have in addition to these many extra nurses, and probably I pay on the average 4*l.* a week for extra attendants.

1455. (*Sir Thomas Phillips.*) Do you employ scrubbers?—No, they do their own work, the wards are all of that convenient size.

1456. (*Sir H. K. Storks.*) Have you any difficulty in getting the nurses?—None, whatever.

1457. Are they trained nurses?—No, we train them; I do not think we should have any difficulty in getting them.

1458. (*Mr. Martin.*) Where did you get the night nurses from?—They are very often married women, who have been assistant nurses.

1459. (*President.*) It would be more difficult to get the night nurses would it not?—No, I think not.

1460. (*Sir James Clark.*) Are the nurses well conducted generally?—Particularly so.

1461. (*Sir H. K. Storks.*) Do you require testimonials as to their character?—Yes, we are very strict on that score; the matron would not be satisfied with merely letters of recommendation.

1462. She is responsible for them?—Yes.

1463. (*President.*) She is responsible for the duties being properly performed?—Yes.

1464. If any one misbehaves, who has the power of dismissal in the case of an assistant-nurse or a head nurse?—In the case of a head nurse it is a very rare thing to occur, but the matron in that case would come to me and ask me what I should recommend to be done, and if it is a very serious case I should say, "Suspend her, and report the case to the committee "on Tuesday next."

1465. The medical officer would have nothing to do with that?—Nothing whatever; he may make his complaint, but he has nothing to do with the management of the hospital.

1466. With regard to the cooking, have you more than one kitchen?—Only one.

1467. In that is the whole cooking done?—Yes, not only for the wards but for the nurses, and there is a mess besides of eleven who dine at five o'clock—the officers' table.

1468. You can roast and boil, I presume?—Anything we like.

1469. How do you get your cooks?—The matron hires them.

1470. Do you give them high wages?—The cook receives twenty-four guineas a year and is boarded.

1471. Are they all responsible to the matron?—Yes. I am superintendent of everything, and all the different departments are answerable to me.

1472. Do you employ a woman cook?—Yes.

1473. In cases of the drainage or the ventilation being defective, or repairs being required, what is the process; who engages the labour to carry the improvement into effect?—If there is an important work to be done, I send to the surveyor and tell him to come and look at it.

1474. Is he a permanent officer?—He does not reside, but he is elected by the governors, and he is paid a per-centage upon the work done.

1475. You would send for him?—Yes, if it was an important thing.

1476. Supposing something were reported to you you would send for the surveyor to examine it with you?—Yes.

1477. And supposing that he considers that such and such a course is necessary to be taken, what do you do?—Either he would write to the committee, naming about the probable amount required, or else I should do it myself.

1478. If they approved of it, who would carry it out?—He would. I have my own way of doing things, and I see that things are done as I wish them to be done, but he orders the bricklayers to go to work; I have my own views of matters, and have things done in my own way. Still he directs. Then again he adjusts all their accounts at the end of the quarter. The accounts of the artificers, the bricklayers, the carpenters, and the people whom we employ.

1479. You never do the work by contract?—Some things we do.

1480. Have you permanent artificers belonging to the hospital?—Yes, but we have other works besides. It is a very large establishment. We have no bricklayers, but there is a great deal of work done exclusive of our new works. We have every year a thousand pounds to pay for current repairs.

1481. Who keeps the accounts of the hospital?—The first clerk.

1482. The steward?—Yes. He keeps all the accounts of the tradesmen, but the secretary keeps the general account of the hospital bankers.

1483. I suppose the secretary does not interfere with the daily accounts of the hospital?—Not at all.

1484. He keeps minutes of the proceedings, and writes for subscriptions and so on?—Yes. He keeps all the bankers' books, the ledger, and all the general annual accounts he makes up himself.

1485. Who provides funds for the payments to be made?—We have our dividends and our rents.

1486. Do you pay once a quarter?—Yes.

1487. Who is it that signs the warrant for the payments?—The committee. That is to say, the chairman of the house committee signs the warrant which is given to the treasurer, and the treasurer then says to the secretary, "let the tradesmen come "on such and such a day," and then he signs the different cheques upon the banker.

1488. Will the banker honour the cheque without seeing the warrant?—The warrant is only the treasurer's authority for the amount which he draws, and he must produce his warrant at the end of the year when his accounts are made up. His cheques are produced, and he must produce the warrants.

1489. (*Sir Thomas Phillips.*) First of all you have a quarterly audit, have you not?—Yes.

1490. The tradesmen's bills for the quarter are submitted by you to the committee, having been audited, I suppose?—The committee of account audits them by direction of the house committee.

1491. Then a list of the bills being so audited is presented to the committee, and authority is given to the treasurer to draw?—A warrant.

1492. For that list?—Yes, or for any other; for instance, I want petty cash every fortnight, and no money can be got from the banker except the cheque is signed by the treasurer and by the secretary, and he cannot draw for money without a warrant, which is his voucher for drawing the cheques, and he keeps them till the end of the year and then he brings them forward as his authority for drawing so much money.

1493. (*President.*) What check have you upon the general expenditure of the hospital supposing that extravagant demands are made by the medical men?—We have none, we leave it to them.

1494. Practically, do they make extravagant demands?—We are disposed to think that they do rather.

1495. The whole scale of the living you think is higher than it need be?—The diet scale is not strictly adhered to, they may mix up other diets with it. They

may give a man full diet, and they may have in addition to that fish, or beef tea, and frequently they give two mutton chops, one for breakfast and one for dinner, and 20 ozs. of wine.

1496. Ought there not to be some means of checking that?—It is one of those difficult things that people who are not professional would not like to interfere with. We say sometimes that the consumption of wine has been large during the previous month, or of meat.

1497. Compared with other hospitals in London, you think that the diets required by the medical men are large?—Yes. At St. George's Hospital they give them 3 ozs. of cooked meat, and at Middlesex Hospital they give 4 ozs. while we give 8 ozs. full diet.

1498. Your rule is to give whatever is desired by the medical man; they are limited to the extras which they see on the list, but any amount of those things on that list they may give?—Yes.

1499. (*Mr. Martin.*) Do you apprehend that the patients who are admitted into your hospital are of a reduced class who require more diet than those who go into St. George's hospital?—No, I think it is just the other way, I am told that it is quite the other way. The men whom we get into our hospital are generally sailors and artificers, and men who consume a great deal of animal food, and they require more; they are better fed than the poor people who go into St. George's hospital; they are labouring men getting high wages and they live high.

1500. (*Sir Thomas Phillips.*) They are frequently men who are employed in the docks?—Yes; I have here a list of the patients that we have had in, and the Commissioners will see the enormous proportion of accidents that we receive; the proportion of surgical cases to medical is enormous.

1501. You have stated that sometimes you think the scale is extravagant for the diet and wine; I see that the average cost of each patient is not high; it is 8*d.* a day?—Yes.

1502. What is it that produces the great difference between 8*d.*, as the daily cost of the diet, and 2*s.* 3*d.*, which is the daily cost of each patient altogether?—There are the salaries and coals, and a general estimate of 1,000*l.* for current repairs annually.

1503. (*President.*) You have not included in that the interest of money sunk?—No, they are disbursements in the year.

1504. (*Sir Thomas Phillips.*) What is the average cost of each bed?—50*l.* is the cost of each bed at the present time.

1505. (*Sir James Clark.*) Do you ever pension your nurses after they become old?—Nothing of the kind. We generally give them a handsome gratuity.

1506. Is your hospital well ventilated?—Yes, excellently; we have nothing artificial; we trust to the windows, and we have very fine fire-places.

1507. (*Sir Thomas Phillips.*) Have you large passages and corridors?—Very fine corridors and fine lobbies between the wards where the patients dine; they do not dine in the wards, and in the lobbies there are fire-places.

1508. You have a large reservoir of air external to the wards themselves?—Yes.

1509. What space do your wards afford to each patient?—About 1700 feet.

1510. (*President.*) What is the distance between the beds?—8 feet.

1511. What is the height of your wards?—12 feet.

1512. (*Sir Thomas Phillips.*) Do you mean 1700 feet for each patient, exclusive of the space in the corridors and passages?—I mean exclusive of that large lobby, which is a very large space in addition, and is common to four other wards. Our wards are 72 feet by 20 and the height is 12, and we have ten patients in those wards.

1513. (*Dr. Sutherland.*) How many sick have you in each ward?—Ten.

1514. (*Sir Thomas Phillips.*) I suppose the diets are altered by the resident officers, day by day in the diet books?—Quite the contrary. They are not permitted to alter them except upon very rare occasions. The surgeons are very stern about that indeed, and the physicians particularly so; they study the diets very much. In many of the cases they give no medicine in the surgeons wards at all, and they effect a cure by diet, as far as I can make out.

1515. (*Sir James Clark.*) I suppose you have many applications for admission from patients whom you cannot receive?—Yes, we have.

1516. (*Sir H. K. Storks.*) Do you always take accidents in?—Yes, and all urgent cases.

1517. (*President.*) You have a greater proportion of accidents at your hospital than at any other hospital?—Very much so.

1518. (*Mr. Alexander.*) How many patients does one nurse attend to?—The head nurse has about forty patients, and the assistant nurses have ten. Each nurse has six assistants under her for forty patients; she has four by day and two by night.

1519. (*President.*) Would any neglect in any of the wards to report an offence to you constitute an offence in itself?—Undoubtedly.

1520. And it would be visited upon the person so neglecting?—Yes; there is a general system of responsibility. I oblige the nurses to report to the matron, and the matron reports to me; and so in the dispensary, the resident medical officer I hold responsible for his department, and if anything goes wrong and I find it out, I call him to account; they are all kept apart; the different departments of the hospital are entirely separate, and the heads of each department come to me.

1521. (*Mr. Martin.*) Does erysipelas arise frequently in patients within the house in the course of treatment?—Very little indeed. I do not say in no cases, but very few.

1522. (*President.*) Do you wash the wards in the hospital?—They are scrubbed once a week.

1523. Are they washed with water?—Yes, soap and water, and well scrubbed one day in the week.

1524. (*Sir H. K. Storks.*) Do you whitewash?—Every year the whole hospital, from the attics to the basement, is entirely scraped, and afterwards is coloured and whitewashed.

1525. And painted?—We paint, when necessary, the wood-work.

1526. (*Mr. Alexander.*) Who takes charge of the sanitary arrangements of the hospital, with regard to the ventilation, the cleansing, and the drainage?—We look to the resident medical officer; it is left more to him than anybody else; if there is anything faulty, (which there is not,) we look to him. The hospital is an old hospital, and has been standing for a hundred years.

1527. Supposing anything goes wrong in the drainage, how would you hear of it?—I should hear of it, and I should immediately employ the surveyor to see to it. The head engineer goes round every day to the water-closets to see that the taps are right; he looks into every water-closet to see that they are all sweet and pure. We have five water-closets to each four wards.

1528. (*Dr. Sutherland.*) You have got one ward fitted up with Parian cement, have you not?—Yes.

1529. How does it answer?—It failed in consequence of the colour, but the substance is admirable. The colour was so bad that we were obliged to have it coloured for appearance sake.

1530. What was the colour?—It became a deep brown colour, and the consequence was that we were obliged to colour it.

1531. If it had been properly coloured it would have been an admirable article?—Yes; we have one ward where the colour is good.

The witness withdrew.

Adjourned to Wednesday next at One o'clock.

Wednesday, 20th May 1857.

PRESENT:

The Right Honourable Sidney Herbert, M.P.
Augustus S. Stafford, Esq., M.P.
Col. Sir Henry K. Storks, K.C.B.
Dr. Andrew Smith.
Thomas Alexander, Esq., C.B.

Sir Thomas Phillips.
Sir James Clark, Bart.
James R. Martin, Esq., F.R.S.
Dr. John Sutherland.

President, The Right Honourable SIDNEY HERBERT, M.P.

J. Meyer, Esq.

John Meyer, Esquire, further examined.

20 May 1857.

1532. (*President.*) You promised to bring to the Commissioners some forms that were used in the Smyrna hospital?—Yes.

1533. What are they?—This (*producing the same*) is the bed-head ticket which was affixed to a small board and fastened up above the bed of every patient. These are the abstracts of extras (*handing in the same*). One return lasted for a week for each division.

1534. Have you the general diet table there?—Here are abstracts of the general diets (*handing in the same*).

1535. Is there anything that you wish to add to your former evidence?—I would merely mention one circumstance. With reference to the signing of those abstracts of the diets, I stated that they were invariably signed by the medical officer—we commenced in that way—it is upon the signing of those abstracts that the whole check of this plan hinges. They must be examined by somebody in whom confidence can be placed, or a door would be opened to all sorts of roguery and deception. First, the medical officers had to sign them daily, but it was found difficult to get the medical men to pay attention sufficient to secure the correctness of the abstract, and later it was placed, in each division, in the hands of some trustworthy person as one might have a person at one's command—sometimes a lady nurse, or occasionally a trustworthy ward-master—the latter were very well paid, and many of them were exceedingly trustworthy men; here is the scale of diets that was adopted at Smyrna (*producing the same*).

1536. (*Dr. Sutherland.*) With regard to those diets you have had experience of dietaries in this country and in the colonies, have you not?—Not much in this country.

1537. Considering the variety in the quality of the supplies which you obtain, is it possible to draw up a diet list that will answer generally, or must you modify it?—I think that it was very necessary to modify it, and this was done at Smyrna very considerably; there were many extras that would not be used in a different climate and in a different place, and the quantities used would be different.

1538. (*Sir Thomas Phillips.*) Was not the ration of meat large for such a climate as Turkey?—The meat was so bad that you could not insure a dinner out of a smaller ration.

1539. (*President.*) Being lean, the proportion of bone was far greater?—Yes; the sheep did not weigh 20 lbs., and they were of very poor quality. The great object in framing the diets was to avoid the use of extras, and the men generally suffering from long disease, when they were convalescent and placed upon full or half diet, required a good deal of food.

1540. (*Sir Thomas Phillips.*) Is the meat weighed raw?—Yes.

The witness withdrew.

J. Scott Robertson, Esq.

J. Scott Robertson, Esq., examined.

1541. (*President.*) What rank do you hold?—That of purveyor-in-chief.

1542. You heard the evidence given by Mr. Pratt the other day, did you not?—A part of it I did.

1543. You have been purveyor-in-chief of a hospital abroad, have you not?—Yes, I was purveyor-in-chief at Scutari to the army in the East.

1544. Have you not been purveyor-in-chief of the hospitals at home?—I am now considered so.

1545. Where are you now?—At the War Office. I am not in a hospital, but at the head of the department. I was not in charge of any particular hospital in the East, but was placed over the department in the East; there was a separate purveyor for each hospital, and I was responsible for the management of the department generally.

1546. There is a considerable difference in the system abroad and at home, is there not?—Not so much in regard to the management of hospitals in the East.

1547. In this respect, Mr. Pratt stated that he was virtually a commissariat officer?—The purveyors in the East were likewise so.

1548. But only so far as the hospitals were concerned?—Mr. Pratt is, properly speaking, only purveyor so far as the hospitals are concerned.

1549. Does he not act as commissariat officer for the provisional battalion at Chatham?—In some respects, I believe, his duties differ from those of purveyors at home; but the differences are peculiar to Chatham. I do not think that they deserve to be considered as purveyor's duties.

1550. (*Sir H. K. Storks.*) He does not supply the troops at Chatham, does he?—I am not aware exactly. I think he supplies necessaries to the invalid depôt. I believe he also supplies rations to the convalescents discharged from hospital.

1551. (*President.*) At Scutari you supplied the rations as well as all the hospital comforts?—Contracts were made by the commissariat for bread and meat, but the purveyor was responsible that the diets of the sick were properly provided.

1552.—How were they transferred to you?—We got them from the contractor direct.

1553. Without the intervention of the commissariat?—Yes.

1554. Had that been the system followed at Scutari?—Yes.

1555. You do not know what was the case before you went out?—I believe that was the system throughout.

1556. Do you think that the system of the purveyor drawing upon the barrack department for much of the

stores of the hospital is a good one?—Yes, I think it is a good one. I consider that the store branch or the barrack branch should be the source from which the hospital dry stores, furniture, bedding, and clothing should be derived; such stores are supplied under the direction of the store department in London. I think that inconvenience results not so much from the system, as from the want of a proper equipment for the hospitals which the barrack master should have at each station. Take Canada, for instance, the average number of troops stationed there is, of course, known, and from this the average sick may be easily estimated; the barrack master then, or the storekeeper, should have an estimate from the purveyor or the principal medical officer as to the equipment required for the hospitals, and the reserve equipment for emergencies.

1557. Why do you say that he should have that estimate from the medical officer? Ought not the equipment of dry stores for the hospital to go, as a matter of course, according to the number of patients?—Certainly, but I do not think that the barrack-master can judge of the per-centage of sick or the necessities of the hospital so well as the medical officer.

1558. Instead of having a requisition made upon the purveyor for all the different things that are thought to be necessary upon each occasion, would not it simplify matters if you had a table in which should be included everything that was necessary for every patient in the hospital?—Yes; there are tables now in existence printed both in the barrack and hospital regulations; but many articles are from time to time required that are not included in these lists. It would be necessary to have an enlarged list, with a much more liberal equipment for each hospital.

1559. For each patient such and such things should be in store, should they not?—Yes; that is, with regard to hospitals generally; but my opinion with regard to a general hospital is, that the purveyor should have those articles in his possession.

1560. That he should have them in store in the hospital, whether in use or not?—Yes.

1561. So that if there were any delay in obtaining supplies from the barrack-master, the service of the hospital should never be impeded?—Yes; I acted upon that principle at Scutari, and I believe successfully.

1562. *(Sir H. K. Storks.)* But you had those things in your own charge, had you not?—Yes; we received them from England or purchased them at Constantinople when requisite; but I do not think that the convenience resulted so much from that as from taking the number of beds in each ward, and having the full equipment in the hospital, with a reserve in the purveyor's hands, in case of emergency.

1563. *(President.)* The barrack-master is a servant specially of the Ordnance branch in the War Department, is he not?—I think that the inspector-general of fortifications is now over the barrack department.

1564. His immediate business is the supervision of barracks rather than of purveyors and hospitals?—Barracks and hospitals.

1565. The inspector-general of fortifications is more intimately associated with the question of barracks than with the question of hospitals?—I should think that his duties included both.

1566. But you may have a hospital not connected with a barrack, may you not?—That depends upon circumstances; if troops were in quarters a house would require to be hired for a hospital.

1567. Have you found practically that there is any delay in answering the indents made upon the barrack-master?—I have had nothing to do personally with indenting upon the barrack department; there was no barrack department in the East.

1568. Under your instructions in Constantinople, you had the power, had you not, of purchasing in the market anything that was necessary for the hospital?—Yes, in the shape of utensils.

1569. Did you consider that that was a special power intrusted to you for the occasion, or would you now as the head of a general hospital be able to do the same thing?—I conceive that the purveyor at home has no right to purchase furniture; but a purveyor abroad, with the authority of the principal medical officer, and the General Officer, might be authorized to do so.

1570. Would he be distinctly told that he could not do so by his instructions?—There are at present no instructions generally applicable to purveyors.

1571. Under the new instructions would it be so?—There is an article there which would authorize it; but those instructions have been drawn out upon the principle authorized by the War Office, that the purveyor was to be in his position with regard to the medical department, what the commissariat now is to the army generally.

1572. Would that imply that the purveyor is bound to provide everything that the medical officer makes a requisition upon him for?—That the medical officer requires in his department; but I do not think that furniture would, properly speaking, belong to the purveyor's department.

1573. If the furniture was deficient or bad, would you consider that he had nothing to do with it?—I think the recourse is first to the barrack branch from the surgeon in the case of regimental hospitals.

1574. I refer to the general hospitals?—In the general hospitals abroad? I do not think there are any.

1575. Are there none at Malta or Gibraltar?—No, they are all regimental hospitals; but the principle abroad should be, I think, very much the same as at home, except that the purveyor should have more power in purchasing than at home, because reference is not so easily made to head quarters.

1576. The only existing instructions for purveyors are, the instructions that were issued in 1854 for the army in the East?—Yes, but they are of no use to the purveyors of districts; they are not applicable to purveyors for their general duty, they are applicable only to general hospital purposes; and I consider that they rather led to a misunderstanding in the East, than otherwise.

1577. With respect to barrack furniture, you think you ought to have a store yourself?—The purveyor of a general hospital should have a store.

1578. You think the purveyor of a general hospital ought always to have all stores within the building that were required?—Everything for the equipment of the hospital; if it contain 1000 beds, he should have the full equipment for 1000, and a reserve in store to meet any emergency, or to replace any articles damaged or lost.

1579. Do you think that the supplies which are now given by the barrack department are sufficient?—No, I think not.

1580. You would require an enlargement of the list?—I think that probably the director-general, or the officers who are best qualified to decide what is proper for a hospital, should make out a list, and the barrack department should be required to furnish accordingly.

1581. If you ask for anything at present which the barrack department has not got, you simply do not get it?—They would not give it at present, but there are several things now as to which some of the purveyors apply direct to the War Office for authority to purchase, others apply to the barrack department on the station. I think that those who apply direct to the War Office get their answers much sooner than the others; the authority goes from here, probably, to the purveyor to purchase.

1582. What is the reason of that difference?—I presume it is that the barrack-master has no stores in hand, and probably he does not consider that he is called upon to supply them.

1583. *(Sir H. K. Storks.)* It is virtually the same application, except that the one through the barrack department is more round-about?—Yes.

J. Scott Robertson, Esq.

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1584. (*President.*) If the barrack-master finds that the medical officer who makes his request is satisfied with his stating that he has no such thing in store, he would probably not trouble himself to represent the deficiency?—I do not think he would.

1585. You have two systems actually in use for the purpose of obtaining the same supplies?—Quite so, but of course the quickest means the purveyor has of getting stores is to apply for authority to buy them. Since I have been home I have had several applications of that sort before me.

1586. Did you allow them?—The War Office authorized the purveyor to purchase them.

1587. In your discretion you think it is better that they should be allowed to do so, rather than that the barrack department should be applied to to purchase and issue them?—It does not matter which. If the barrack department supplied them, well and good; but there is at present so much reference from one department to another that it is much better that the purveyor should get them.

1588. It would be the easiest in practice?—It does not follow that it would be the easiest in practice if the barrack department were authorized to supply those things upon application.

1589. Are they not authorized to supply them now?—I do not think so; they have a certain list beyond which they cannot go.

1590. Is it not somebody's business to authorize the barrack department to issue those things?—It is the business of the Secretary-of-State.

1591. Therefore the deficiency of the barrack department ought to be brought to his notice?—Quite so.

1592. Where anything is required in a hurry, however well intentioned the barrack department may be, does not application to another department for small articles produce much unnecessary delay?—Certainly. It would be the more expeditious way of getting the wants of the hospital supplied, if the purveyor of a general hospital were authorized upon the approval of the principal medical officer, or whoever is the head, to buy those things on the spot without reference.

1593. If you had a table of everything that should be supplied, and you had them in store, and once a quarter you took stock to see how much you had in store over what you had in use, and you made up that which by the regulation was to be the standing store, you would have very little trouble with the medical officer, and you would require but few requisitions?—A very few indeed.

1594. You have no reserve within the hospital?—I think in but few cases have they a reserve at present.

1595. In the East you say that you procured things yourself, without reference to the barrack department?—Yes, the barrack department rather depended upon us for things in the East.

1596. At Constantinople there was no representative of the barrack department?—Not properly speaking so. There was a store-keeper. An army in the field does not have a barrack-master.

1597. If you pursue the practice in peace of getting everything through the barrack-master, it is always necessary to change it in war, is it not?—That does not follow.

1598. The barrack-master is not there?—Just so; but an officer of the store branch would be there, as is now the case in China; they have taken the equipment for the hospitals out there.

1599. But at Constantinople you did not take that course?—No, there was no previous organization.

1600. With a general store-keeper out there, I suppose the tendency of the way of performing their duty was to send everything by preference to the front, where it would be most required?—There was a store-keeper at Constantinople, but I think it was entirely army-stores for effective service that he had charge of. He had nothing to do with the hospitals. I do not know exactly what description of stores the store branch had at Constantinople. I know that he had nothing for us, except in one or two instances he bought, or, I think, the engineer got some bedsteads made for us.

1601. If the purveying of the hospital, not only of the rations but of the medical comforts, and so on, had been put upon the commissariat, could they have done it as effectually as the purveyor?—No, I think not.

1602. Will you state why?—Simply because the subdivision of labour always, I think, ensures the work being done more correctly. I should expect a shoemaker to make my boots much better than a tailor; and I expect the purveyor, whose duties are to attend to a hospital, to do the work of the hospital much better than a commissariat officer who has the effective army to provide for, and who, even if he had the work of the hospital to do, would consider it a subsidiary duty.

1603. Is not an arrangement which is good as between the purveyor and the commissariat good as between the purveyor and the barrack-master?—Exactly so.

1604. The best security to have a hospital efficient is, that the purveyor in the hospital should be the source of supply?—Yes; to the medical officers; but when the commissariat have existing general contracts for the supply of bread and meat, the purveyor should be able to avail himself of them; and when the War Department storekeeper has stores in his possession for the different branches of the service, the purveyor should apply to him for the articles he requires for hospital use.

1605. To draw upon?—Yes; the purveyor should send him an estimate of the stores that he may require for the year, just as he sends to the commissariat an estimate for money.

1606. There are certain stores necessary for a hospital, are there not, which the store-keeper could not have?—I think he should depend upon the purveyor, or the principal medical officer of the hospital, to give him the necessary information, and he should then provide accordingly.

1607. All the medical comforts could be provided by nobody but the purveyor?—The provision of these is distinctly the purveyor's duty.

1608. You think that they could not be transferred to any other body?—Not with convenience. I think it is quite possible to do away with all the departments by bringing them into one, and making the commissariat everything, but I do not think it would work well.

1609. You think that the commissariat would have its attention too much fixed upon the efficiency of the army in the front to think of the hospitals in the rear?—I think it was frequently found so in the case of the hospitals in the East, where purveyors depended on the commissariat for bread and other articles.

1610. You see no difficulty in the purveyor, whether he originally gets his stores from the barrack-master or not, issuing for every patient certain things without a requisition from the medical officer?—Each bed in a hospital should be fully equipped; so many sheets, so many blankets, and changes, of course, of everything, as part of the equipment.

1611. And the admission-book of the hospital would be a voucher to the purveyor for the number of beds and other things issued?—Yes, exactly so. Suppose a hospital with 1,000 beds, of course there should be to each a bedstead, a mattrass or paillasse, bolster, pillow, blankets, sheets, and coverlid.

1612. You would include other things, would you not?—Yes, all necessary utensils, plates, knives and forks, &c., those would all be in the ward under the ward-master's charge, of course; then there is the personal equipment, there would be the necessary changes of clothing for the patient; probably three sets, one in use, one being washed, and the other in the charge of the ward-master for the next change of linen. The purveyor would receive the dirty linen on the day it was changed, and would send it to be washed, and when it came back he would

receive it into store; the ward-master in the meantime would, of course, having sent so much dirty linen, receive from the purveyor's issuing store, so much clean linen, and the ward by that means would be continually in a state of equipment for the full number of patients.

1613. Is the present equipment sufficient?—It is difficult to answer that question because of the present unsettled state of matters connected with hospitals generally. In regimental as well as general hospitals the soldier supplies the most of the things he requires; but I believe the Secretary of State has decided that the patients are to be allowed in future certain articles of clothing for use while in hospital; therefore their packs and their clothing will go to the pack store.

1614. Are you at all acquainted with the interior of the Chatham hospital?—No, I have never been there. I am not much acquainted with the interior of any of the hospitals at home. Since I have been at home I have been principally performing my duties at the War Office. The practice is so varied just now in different districts, that to give an answer to any particular question one would have to know the district to which it refers.

1615. You are in a transition state?—I do not think that it has ever been different. I think that the system all along has been most unsatisfactory.

1616. Still at present you have regulations put out for the future which did not exist before; for instance, such a one as you have mentioned that the soldier's kit is not to be drawn upon?—Yes, when that is promulgated it will extend to the general hospitals both at home and abroad. I do not know whether it extends to the regimental hospitals.

1617. Ought every general hospital to have a laundry attached to it, or would you wash by contract?—At Chatham and Dublin the system of having a laundry has answered very well, and in an economical point of view, so far as the washing of the personal linen is concerned, it has been very successful.

1618. (*Sir H. K. Storks.*) How did you wash at Scutari?—We began originally by contracts; then a great proportion was washed at a public wash-house erected by the engineers in the valley between the general and barrack hospitals.

1619. Did you perform any washing at Scutari besides the washing for the hospitals there?—When the men brought down their blankets, we washed them.

1620. Did you wash for the hospitals in the front?—Yes. When I visited the Crimea, I found that the washing was so badly done there, that I requested that the dirty linen should be sent down to Scutari every week.

1621. How did you wash it?—Partly by contract; what could not be done at the wash-house, we gave out to a contractor.

1622. Was it as well done by contract?—I think it was done very well. The things were in such a dreadfully filthy state, that I think any system would have failed to wash them clean.

1623. (*President.*) Upon the whole, you think that you should still receive your stores from the barrack-master, but retaining such a reserve in store as should give you security against any deficiency?—With regard to general hospitals, and under the circumstances I have already stated, I do not think that we should have to go to the barrack-master more than once a year. At the end of the year the purveyor would find out how much had been expended, and what his reserve store would be equal to supply, and he would merely have to send in an estimate to the barrack-master for the additional articles required.

1624. Would you have the same confidence in the goodness of the materials to be supplied by the barrack-master, as you would have if you were in the hospital and you were the person to judge of the quality of the articles, and made the contracts?—I have not the least doubt that the purveyor and the medical officer are the best judges of what is needed for a hospital, and upon that principle I should say that they would know the description of bedstead, and the quality of the bedding and linen, as well as the quality of the food that was best suited to the patient.

1625. You would have more authority in the rejection of what was thought unfit than if you merely had to pass your rejection on to another department, who naturally would justify their purchase?—Yes.

1626. There would be greater security, would there not, for the excellence of the supply, if you furnished it yourself?—Yes, just the same as if I bought articles for my own private consumption instead of intrusting the purchase to another person who had less interest in the matter.

1627. Take the question of repairs and alterations at Scutari; how did you do that?—The system varied a little at Scutari. At the general hospital the principal medical officer made a demand on the purveyor, who forwarded a requisition to the commanding engineer. The course at the barrack hospital was for me to send a requisition to the Quartermaster-General, who approved of it or not, and if approved it went to the engineer to be executed.

1628. (*Sir H. K. Storks.*) Who approved of them?—Captain Macdonald.

1629. Did he approve upon his own responsibility?—Always; except in large alterations.

1630. Say for a pane of glass?—I do not think the engineers would necessarily require an approval to such small repairs; but when I went to Scutari, for instance, the latrines had no coverings, and I made a requisition for seats; those were put in by Captain Gordon, I presume only with the approval of the Quartermaster-General. I do not think that Lord William Paulet ever saw the requisition; but in the case of a large expenditure, I believe the Quartermaster-General or engineer would lay it before the General Officer commanding, for his approval.

1631. (*President.*) You have had no experience of hospitals at home in that respect?—The system at home is, I believe, for the purveyor to make a requisition upon the barrack-master and the barrack-master forwards it to the engineer, who then executes the repairs.

1632. Does the barrack department invariably execute them?—That is a question I cannot answer. That is the system; the purveyor has nothing to do with the engineer; he sends his requisition to the barrack-master, who sends it to the engineer.

1633. You do not know practically whether the engineer employs an engineer to do it, or whether he does it by hired labour?—Possibly by both systems, according to the wants of the station. At Scutari the engineer employed his own men; but he also engaged labour, and did the work partly by contract.

1634. In the case of insufficiency of ventilation, who is the judge as to the number of patients that there ought to be in a ward in the hospital?—Decidedly the principal medical officer is the most competent judge.

1635. It is laid down in the regulations that there shall be so much space for every man, and a certain distance between the beds?—It is so stated in the hospital regulations of 1845.

1636. If the medical officer complained that there were more beds than the ward would hold consistently with the regulation, what would the purveyor do; would he have any remedy?—On the order of the principal medical officer he could alter it.

1637. If the wards are full, and the fulness of the wards militates against that regulation as to the number of men to be in each ward, and the principal medical officer complains to the purveyor, to whom has the purveyor recourse?—He could have recourse to the engineer, but I do not think that the purveyor in that case would be referred to; it would be a case for the principal medical officer to report. We have had a case of that sort recently, I think. When a purveyor was sent over to Jersey, he made a representation that the hospitals there were in an unfit state for the sick, but he could do nothing on the spot, and therefore he referred the question to the War Office.

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1638. Were they unfit from being too small or otherwise?—I do not remember the particular circumstances of the case; at any rate they were unfit from their position. I think from dampness.

1639. If they were large enough, but unfit from the want of ventilation, could the purveyor open a ventilator?—No, unquestionably not; he cannot make any alterations in the building.

1640. He could apply to the barrack-master, could he not, and ask him to do it?—By the direction of the principal medical officer he might do so.

1641. Did the barrack-master exercise any discretion in that matter? did he execute it or refuse, or say "I do not think it is necessary?"—I should think that they would, in cases of difficulty, refer to the officer commanding, and would not take upon themselves to refuse. The commanding engineer has a certain amount of money at his disposal, and he might say "I have no money to do so;" if it was a matter of very great importance, he might refer it home to head quarters, if he was urged to do what was required.

1642. Do you happen to know whether, in the estimates, sums are voted separately for barracks and hospitals?—I think that a certain sum is voted for each station.

1643. But for barracks as separate from hospitals?—I cannot answer that question.

1644. Applying the same test that you do to the case of food and the supply of dry stores, would not the hospital service be far more efficient, if there was some limited authority vested in some one on the spot to make alterations when a necessity occurs?—Decidedly. I conceive that the principal medical officer on each station, who is a man of experience generally and of high relative rank, should be invested with the power, in cases that he saw necessary, to request the proper officer to make such alterations as were required for the interests of the sick.

1645. With regard to the ventilation of the building and to the correction of insufficient drainage, ought there not to be somebody on the spot to order such things to be done?—In a case of that kind, involving a large expenditure of money, I think, on the representation of the principal medical officer, the general officer commanding should be invested with power to make alterations.

1646. You would not have some person within the hospital, in the nature of a commandant, who should have that power?—That applies to the general hospitals, does it not?

1647. Yes.—I think, as to general hospitals, there should be a directing power, and that power should be vested in a military officer as commandant, and that he, together with the principal medical officer or physician, and the purveyor, at a board, should decide what was to be done in the hospital, and that power should be vested in them to carry out their decision.

1648. Having three departments co-operating in the hospital, the medical department, the purveyor, and for building, the engineering department?—An engineer officer might be attached to the building, under the direction of the commandant.

1649. Instead of those three departments always referring up to the central authority at Whitehall, there should be some one person able to bring those three bodies into co-operation, upon his own responsibility; and when he felt the task too heavy for himself alone, he should be able to refer to the Secretary of State?—I think the want of such a directing power is the great evil of the present system.

1650. Would not that simplify the thing very much?—Very much. I think it would work admirably well; that was the old system, I think.

1651. Why was that system abandoned?—I suppose it was from principles of economy.

1652. (*Sir Thomas Phillips.*) What book are you referring to?—I have the general hospital regulations of February 1820.

1653. (*President.*) Will you read that rule?—"The Commandant is invested with the entire control of the hospital." It does not invest him with the power of altering the hospital; but I should think that in such a case he would be the proper person to authorize expenditure for alterations, and that with his concurrence, on the recommendation of the board in the hospital, the alteration should be made.

1654. (*Sir Thomas Phillips.*) That rule refers to the Commandant-General of hospitals, does it not?—Yes; and the commandants under him.

1655. Is there any such officer now as the Commandant-General of hospitals?—There is no such officer.

1656. (*President.*) Do you consider that there ought to be a separate transport for the medical department?—My opinion is this, that with regard to an army in the field, there should be a Commandant-General of hospitals with the army in the field in operations, and that he, with the purveyors and others under him, should have everything for the sick.

1657. (*Sir H. K. Storks.*) Transports and all?—Yes, everything. That there should be a purveyor's clerk attached to each regiment, having charge of the stores, who would also prepare the hospital returns, financial or otherwise, and who should, after an action, have, under the commandant, the duty of removing the wounded.

1658. (*President.*) From the necessity of the service they must have distinct means of carriage?—The necessities of the service require distinct means of carriage in the removal of the sick.

1659. Therefore, the question is, whether or not they should apply to the Land Transport for horses, or have horses of their own?—There would be ample work, of course, for horses of their own in carrying hospital stores, and therefore it would be no matter of extra expenditure, I should think, for the hospital branch to have everything within itself; but there would be no difficulty in transferring to the Commandant-General a portion of the military train for the purpose.

1660. It would not, you think, produce complication?—No, I think that they have that arrangement in the French service; but there should be a superior military officer, equal in rank to the Quartermaster-General, who should have the whole management of those things.

1661. In the French service the Intendance supplies the army as well as the hospital, and everything to all the departments, does he not?—I do not know that he does; I understood that he was over the hospitals only.

1662. In the report of Mr. Cumming upon the state of the medical department in the Crimea, he mentions this:—"We learnt that the issue to regiments of huts and marquees and other articles was made only upon requisition. We think that the consequence of this practice may be observed in the hospital accommodation which the above table exhibits. The condition of the sick varies in every regiment, and it varies in great measure with the energy and zeal of the commanding and medical officers, and with the means of transport at their disposal." And the third suggestion that he makes is, "That every regiment should always be supplied at once with its due allowance of hospital accommodation and furniture without requisition?"—Yes, quite so; they should follow the division. The probable number of sick and wounded should be calculated, and then the equipment for that number should follow with the rest of the baggage.

1663. The fourth suggestion is, "That a store of medicines and medical comforts, sufficient for the probable wants of the army for three months, should always be kept at head quarters, or some other place easily accessible to the various divisions of the army." All those details you probably agree with?—Yes, quite so. That is the principle upon which I provided the stores in the East, and upon which we are acting with regard to the Chinese expedition.

1664. "That these stores should be replenished periodically from the principal store without requisi-

tion." That is, in fixed quantities from the principal store at the base of operations ?—The proper course in such a case would be to supply on requsition ; I think the system at Scutari will perhaps very much illustrate it. The general store was apart altogether from the separate hospital stores. When I arrived at Scutari the surplus stores were mixed up with the individual hospital stores ; I separated them altogether from the hospital stores, and equipped each hospital with medical comforts equal to three months' consumption, after which I had the reserve placed in the general store; I refer to the hospitals in the Bosphorus only. From the general store were supplied, upon the requisition of the purveyors, such quantities of dry stores and other things as they required. We supplied the hospitals in the Crimea as well, upon the requisition of the senior purveyor there. He kept a subsidiary store for the use of the hospitals in the Crimea and the regimental hospitals in the front. His demands upon the general store at Scutari were very large, so much so that at first when I went out his requisitions could not be complied with in full until I went into the market at Constantinople to purchase.

1665. (*Sir Thomas Phillips.*) Did you send those supplies off upon requisition only ?—Yes.

1666. Is there any inconvenience in requiring a requisition to be made to you ?—No inconvenience at all. We cannot, unless we have returns, know the actual expenditure of the hospital ; and I consider that the purveyor in charge of the hospital is the best judge, as he would, from his accounts, know the state of his store and the rate of consumption, and accordingly would frame his requisition upon the principal depôt.

1667. (*President.*) If the ration of the soldier was enlarged, and consisted of other things besides a pound of meat and a pound of bread, would not that diminish the number of extras, and so diminish the number of requisitions ?—The number of requisitions need not be very large in a hospital in ordinary circumstances; the extras are all placed on the diet rolls, or should be so ; of course when a medical officer visits his patients in the course of the day, after the extra diet roll has been made up, he may think it necessary to make a requisition on the purveyor's stores for extras required on the instant ; but this is not a source of inconvenience.

1668. You would have in your store everything included in the list of extras ?—Yes.

1669. And wine ?—Yes, clearly so, everything of that description ; for these the purveyor should only require requisitions. In the first instance I believe in the East they had no diet rolls or requisitions ; the number of sick was so great, and the staff so inadequate, that they supplied the list without reference to requisition or any other voucher ; such was the case at the general hospitals at Kulali and Scutari.

1670. How was that done ? There must have been some record to help the man's memory ?—All the men that came down were placed on half-diet. The purveyor issued the half-diet, and a quantity of extras which were divided among the wards to meet the necessities of the sick.

1671. Mr. Wreford states that when he first arrived there, "porter, ale, and occasionally barley, sugar, and rice, are procured for the hospital from the commissariat, who also supplies straw, wood, and charcoal, and, according to Mr. Stuart's evidence, candles and oil." "When the hospital was first established the purveyor made the contract ; afterwards, the commissary-general claimed the right of making the contract, but appended the condition that the purveyor was to pay. This was done about July or August. Things continued under that arrangement till 1st January. Since that time we have reverted to the usage that the commissary pays the contractor on the verified account of the purveyor." Is that the course that you pursued ?—Yes ; the contractor supplied us with the provisions, and the commissariat rendered to us, quarterly or monthly, an abstract of the supplies furnished by the contractor. The purveyor then prepared a draft on the commissariat chest in favour of the commissariat officer, who paid himself, and gave the purveyor a receipt for the amount ; there was no money transaction.

1672. Mr. Cumming and Mr. Maxwell state, "We think that the duties of the purveyor in our hospitals in the East are too numerous and heterogeneous to be efficiently performed by one person." Do you agree with that ?—Probably so ; but not with a sufficient staff under him.

1673. Mr. Cumming does not mean one man, but one class of officers ?—Then I do not agree with him.

1674. They further say, "he has to provide clothing, stationery, provisions, and washing ; and to issue the former and superintend the last. He has, further, to superintend the servants, and the cooking and distribution of meals ; to see to the cleanliness of the passages and exterior of the building ; to report its want of repair ; to make funeral arrangements ; to keep a register of the patients, officers, and servants ; to make out the pay and ration returns of officers, their servants, and horses ; and to make the wills of any patients needing that assistance." Practically, can the purveyor be made responsible for the cleanliness of the wards, and the proper usage of the furniture and stores that are in them ?—I do not think he can.

1675. There is no officer permanently in the ward, is there?—The ward-master is there ; but it is impossible for the purveyor to exercise proper control over him, unless the ward-master is his servant.

1676. Is not the ward-master the proper person to be held responsible ?—Under the surgeon.

1677. And you think that some chief attendant in each ward should be responsible for the care of the furniture, and for the cleanliness of the ward, and the cleanliness of the patients ?—Most certainly.

1678. He ought to be under one chief ?—Under the senior medical officer of the division of the hospital. I think it would be found to work very badly, to place the purveyor over the ward-master, or the orderlies within the ward, under the present system.

1679. His responsibility should end, so far as the care of the stores is concerned, when he has issued them ?—I think so ; but that he should make his inspections with the barrack-master, weekly or monthly.

1680. You now send back to the barrack-master the barrack bedding to be washed ?—At present the bedding is washed by him.

1681. Is it well done, or are there complaints of it ? —I hear no complaints of it. At Woolwich the system works very well, but the contractor for the hospital personal linen and the contractor for the bedding is one and the same person, and they are both done well. I see no reason why it should not work well ; the purveyor would have his necessary equipment, and he would be independent of occasional delays, if such occurred.

1682. Would it not be better if all the washing was done within the laundry of the hospital ?—Where there is a laundry it might be so, and it would simplify the matter.

1683. Would it not also obviate the complaints that are sometimes made, that the washing is insufficiently done ?—I did not know that such complaints existed.

1684. The same principle will apply again there, that those who are interested in having things done, are most likely to have them properly done ?—The purveyors are the responsible officers, therefore all the blame would be attachable to them, and they, being under the control of the supreme authority in the hospital, there would be greater power over them than there could be over the barrack-master.

1685. When you were at Scutari, had you the medical staff corps ?—Yes, we had the medical staff corps latterly.

1686. Were they then in full operation ?—Yes.

1687. Members of the medical staff corps, acting as ward-masters ?—Yes.

1688. They were persons, were they not, in whom you could place confidence for the responsibility of the wards ?—Some of them were very good men, I believe.

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1689. You occasionally sent round one of your own clerks, did you not?—I took that step at first, in order to satisfy myself, not with regard to the medical staff corps, for they had not arrived, but with regard to the cleanliness of the wards generally. I believe one medical officer objected to it, but Mr. Camming supported me in it, as he generally did.

1690. It was found that he had not the same authority in the ward as the man whose authority was recognized there day and night?—He could not have.

1691. Nor could he know what was constantly occurring?—No.

1692. The ward master would have more authority than even your clerk going round?—Clearly so; the ward-master I consider to be the responsible person under the surgeon for the cleanliness and proper conduct of the ward.

1693. (*Sir H. K. Storks.*) Was the purveyor at Scutari responsible for the cleanliness of the interior of the hospital?—Not for the interior; he was for the passages and the privies.

1694. The exterior?—Yes.

1695. Was the question raised as to who was responsible for the interior, and who was responsible for the exterior?—I think it was so with one of the purveyors.

1696. How was that decided?—It was decided that the purveyor had only to do with the exterior, the passages and the open places, and that he was not responsible for the cleanliness of the interior of the wards.

1697. And that he was not responsible for the conduct of the kitchen?—Yes. For the kitchen he was responsible.

1698. By whom was that order issued?—I think by the general officer in command.

1699. (*Sir Thomas Phillips.*) Are you aware that in a civil hospital that is not so?—I believe that the medical officer simply performs his professional duties in a civil hospital.

1700. How do you think that system would apply to a military hospital?—If the medical officer were only held responsible for his professional duties, I do not see why it should not answer very well. You would simply require to have a resident officer, to be supreme over the servants.

1701. That would be making the ward-master the servant of the purveyor instead of the servant of the medical officer?—Yes, it would be extending the duties of the purveyor and making him supreme over the servants. He has, by the old regulations, the general supervision of the servants, but I think that is in practice obsolete. I do not think he can exercise any supervision where they are under the charge of the surgeon.

1702. With regard to the supply at present in a general hospital,—supposing I were to divide the actual supplies into four classes, and to call one fixed stores or equipments, the other rations, the third medical comforts, and the fourth medicine; the fixed stores are supplied from the barrack department, are they not?—Yes.

1703. At least, certain portions of them; that is to say, those articles which are kept in store in the barrack department?—Yes, those the barrack-master supplies.

1704. Whatever is needed of that class of necessaries which is not in the barrack-master's list, is the purveyor himself then authorized to supply by purchase or otherwise?—He applies to the War Office for authority to purchase.

1705. Without that authority he has no power to supply articles which may be needed, but which are not in the barrack-master's list?—At home he has no authority. Abroad I should think that the authority would be in the principal medical officer or general officer commanding; there is no regulation to that effect.

1706. (*President.*) Is not this the fact, that for the supply of round towels you apply to the barrack department; but as the barrack department does not supply square towels for the men who are confined to bed, you have to make an application to the Secretary of State to be permitted to purchase square towels?—It would be so in that case.

1707. (*Sir Thomas Phillips.*) Then there is no express authority, so far as you know, to any officer to provide those articles without application to the War Office?—No.

1708. Now take the question of rations; are they supplied direct by the purveyor; does he contract for them, or is that contract made by the commissariat and supplied through the commissariat to the purveyor?—The purveyor provides the medical comforts, that is, wine and such articles; but for meat and bread the purveyor takes advantage of the commissariat contracts, where they exist.

1709. That is to say he derives all his supplies through the contracts that the commissariat enter into for victualling?—Yes; he has power to make contracts for himself, but in practice he generally takes the commissariat contract.

1710. Is he absolutely authorized to make any contracts that he pleases for victualling the hospital?—Yes.

1711. (*Sir H. K. Storks.*) How do you show that?—By the present practice and the written instructions with which he is invested.

1712. Can you show the Commissioners those instructions?—I have not got a copy of them; but much of the same spirit is in the proposed instructions now in your possession; and instructions have been issued provisionally which have been sent to foreign stations.

1713. (*Sir Thomas Phillips.*) Apart from this do you know any instances in which a purveyor has victualled an hospital independently of the commissariat contracts?—In the case of Chatham it is so, and I think it was the practice in Dublin: I believe the purveyor there now takes advantage of the commissariat contracts.

1714. Are you of opinion that the purveyor ought to have full authority to victual the hospital independently of the commissariat?—I think he should have power to act according to his own discretion in the matter.

1715. Then we come to the medical comforts; by what authority are they supplied?—That is considered to be the province of the purveyor, and he supplies them without reference to the commissariat; bread and meat are the only articles regarding which a distinction may be made.

1716. What is the distinction that you draw?—That he uses if he pleases the commissariat contract for supplies of bread and meat to the troops; but for all other supplies he arranges himself with the tradesmen direct.

1717. That is only as a matter of convenience to himself. As I understand you, he has absolute authority to victual the hospital at his own discretion?—Yes.

1718. And it is only in exercising that discretion that he goes to the commissariat?—Yes.

1719. He has absolute power to victual and to supply medical comforts to the hospital to any extent, has he not?—Yes.

1720. Upon his own individual responsibility?—Yes; his acquittance being the proof of the authorized consumption in the hospital of the things purchased.

1721. (*President.*) The nature of the things depending upon the opinion of the medical officer?—Yes.

1722. And that you would obey always?—Yes.

1723. Would you obey it if it was an extravagant demand?—Yes, provided the demand were in the handwriting of the surgeon. There was an instance in Dublin in which a man was, I think, provided with an average of 12 bottles of porter a-day, and other extras in proportion; the purveyor, very properly, I think, brought the circumstance under the

notice of the prineipal medical officer personally ; but the principal medical officer considered it a delicate question, and would not interfere. I suppose the disease with which the man was afflicted justified the expenditure of so many comforts ; however, that was an extraordinary case, and it only instances the point where the purveyor might very properly call the principal medical officer's attention to a particular diet-roll.

1724. (*Sir Thomas Phillips.*) With regard to the equipment and the standing provision for the supply of the hospital, are the Commissioners to understand you to say that you think it would be more convenient that they should be supplied independently by the purveyor's department, or that it could be conveniently supplied from the barrack department, as has hitherto been done ?—The advantage of the barrack department equipping the hospital is this, that they, I presume, have larger contracts for certain articles, and they furnish the things cheaper under those contracts ; that is the only advantage that I know of.

1725. You stated, did you not, in answer to a question which was put to you by the Right Honourable President, that if the contracts were made by the purveyor's department independently of the barrack department you thought that you would have better means of satisfying yourself as to the quality and description of the article supplied ?—Clearly.

1726. And thereby ensuring a better description of articles ?—Yes ; but not on such an economical scale.

1727. Economy, you think, would be consulted by means of the barrack department ?—By their larger contracts.

1728. And quality might also be ensured ?—I do not see why not. If the barrack department were impressed with the necessity of procuring a superior thing for the hospital, they certainly could provide it.

1729. Supposing that the purveyor of a hospital in Great Britain, instead of communicating as at present through the barrack department, communicated through the purveyor's department in London, would that in your judgment facilitate the supply of any article that he might need ?—I think that it would facilitate it very much if the estimates were forwarded to the branch here, when I could express an opinion upon them and then forward them to the store branch to supply the necessary articles.

1730. (*Mr. Martin.*) Is it not the practice of the service that the commissary contracts, and that you receive and dispense ?—The service abroad has been so ; it was so in the East.

1731. (*Sir H. K. Storks.*) Is it not within your knowledge that all contracts are to be made by the commissariat, particularly for bread and meat ?—It is stated so in the hospital regulations of 1845, but the provisional instructions with which the purveyors are furnished, give them, as far as I recollect, the option of making contracts for hospital supplies. Though the power is vested in the purveyor, I do not think that it has ever been exercised.

1732. Will you show the Commissioners how that power is vested in the purveyor by the existing regulations, which authorizes him to enter into contracts ?—I will.

1733. (*Dr. Andrew Smith.*) Is it the practice now for the purveyor to be required to take the meat and bread for the hospital, such as the troops have to receive, or is not the purveyor allowed to give an extra payment for better meat and bread ?—I think that refers to home. I do not think, with regard to the purveyor, that that is placed in the hospital regulations, nor do I believe that abroad it is the practice for the purveyor to do so. In the East we used the bread and meat that we got from the commissariat. At home the purveyor is allowed to pay a halfpenny a pound extra for meat beyond the contract price for the troops, to ensure better quality for the sick.

1734. For instance, at the Cape of Good Hope, or any other station, there is a purveyor, and that purveyor would not be required to receive the meat and bread usually issued to the soldiers, agreeably to contract, but there would be the privilege granted to him of paying a higher amount in consequence of the bread and meat being required to be of a superior quality ?—Yes ; I presume he would have that discretionary power.

1735. (*Mr. Martin.*) Is there any preparatory training for young men for your branch of the service ?—They enter the purveyor's office and are trained there. The purveyor's department is one that has been resuscitated in a measure, but it has been in abeyance for many years.

1736. Its existence is not permanent but occasional ?—During the war in the peninsula it formed a part of the army establishment, but since then it has been until very lately in a great measure discontinued.

1737. Are not their functions in abeyance during peace ?—To a certain extent they have been discontinued.

1738. What are the distinctions which you consider proper as separating the duties of the purveyor and those of the commissariat ; how should you distinguish between the two ?—The purveyor's duties consists in the preparation of the financial accounts of the hospital, the examination of the hospital diet rolls, the providing comforts for the sick which are not contracted for, or provided by the commissariat for the troops.

1739. Are you aware that for the service of the hospitals in the East Indies, both regimental and general, one department only existed, namely, the commissariat, for the supply of all the hospitals ?—I am not aware of the existence of that principle.

1740. Did not the two departments clash in the Crimea, one party furnishing and another paying, and one party furnishing some articles, and another party furnishing other articles, so as to appear to be incongruous ?—I am not aware of any clashing, but I represented at home that the simplest and most agreeable way, and certainly the safest way for me, as being responsible for the conduct of the department, would be for me to have the whole responsibility of supplying everything required for the sick.

1741. Not to share the duties with the commissariat ?—No ; but the authorities at home did not agree with me. The instructions issued were that I was to buy such hospital utensils as were necessary, but that the contracts for provisions were to be made by the commissariat.

1742. Are not the duties of the purveyors and of the commissariat in both instances essentially commissariat duties and none other ?—Purveyors are the commissaries of hospitals ; but their duties go further than that. With regard to general hospitals especially, they have charge of the furniture, bedding, &c., and have much to do with the internal and external order of the hospital.

1743. Is there anything in the service of a general or regimental hospital which is now performed by the purveyor, which might not be equally performed by the commissariat ?—I think it would not signify what name the officer went under who performed the duties. The same staff would be required in either case. I think that the name does not in the least matter.

1744. (*President.*) If there was a separate portion of the commissariat devoted to the hospital service, as it is in India, the difference is not so much, except that we have two names and the Indian service one ? —I think that the name of "purveyor" does not exactly express the duties that he has to perform. "Hospital commissariat" would answer the purpose equally well ; he is the commissariat officer of the hospital ; his duties go further, especially in regard to general hospitals. The purveyor of a district at home is undoubtedly the commissariat officer of the hospitals in his district.

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1745. With this difference, that the commissariat officer rides over them occasionally?—In preparing general contracts for the troops.

1746. Our troops are fed by the commissariat in all the colonies?—Yes; but if the purveyor were satisfied that the bread and meat supplied were not such as were proper for the sick, he has the power to make other arrangements. The great evil is that the existing regulations are in a great measure obsolete, or altered, and that in some respects there are no regulations whatever.

1747. (*Sir Thomas Phillips.*) Do the purveyors at present perform part of the commissariat duties?—Not for the troops.

1748. Why should they not?—I see no reason why they should.

1749. (*Mr. Alexander.*) Would it not facilitate the matter if the purveyors had in their charge all the hospital stores, bedding and everything?—Decidedly; if the purveyor had, from whatever source he received them, all those stores in his own possession and in his own charge, there could be no difficulty in supplying the wants of the sick.

1750. Do you not think that they ought to supply all those stores and keep them in their possession?—I think that they ought. I think that the purveyors should have everything for the use of general hospitals; with regard to barrack or regimental hospitals, it would be almost impossible to do so.

1751. Suppose you had a purveyor's clerk, could it be done in the one case as well as the other?—Yes; but we must very much increase the purveying department.

1752. You have now at Montreal three men to look over one hospital and one detachment; could not those three men also take charge of the barrack furniture?—If we retained those three, there is no reason why one at each sub-station should not perform all the duties required at the hospital, except professional duties.

1753. Is it necessary to have an officer at a small station; could not you give the hospital stores and the hospital furniture over in charge to the steward of that hospital, holding him responsible for the same?—That is to the hospital serjeant?

1754. The steward or serjeant?—He has now the charge of the stores in a regimental hospital. It must be understood that in a regimental hospital the system is for the hospital serjeant under certain restrictions to have charge of everything in the hospital under the surgeon; but when the regiment leaves the station he transfers the stores to the barrack department officer. But if the purveyor did so instead, one of his officers would require to reside on the spot, and there does not appear a necessity for this increase of expense.

1755. According to your previous answer, you consider that you ought to make requisition upon the storekeeper, and that the storekeeper should issue those things to the department. Do not you think that it would be better to have everything, such as hospital, bedsteads and bedding required for the hospital in their own store, and that they should issue them, and have nothing to do with the barrack-master?—Take the case of the purveyor at Quebec, there are two purveying officers there; the purveyor's clerk would, upon your principle, have everything for issue to the hospitals in Quebec; that would answer very well for hospitals in the city itself, but then suppose there are two or three detached hospitals miles from Quebec, but in the same purveying district, and suppose a barrack serjeant to be in charge of each of those stations, it would very likely be attended with inconvenience, if the hospital stores were in the purveyor's possession; you could not send from the purveyor's stores at Quebec as readily as the barrack-master on the spot could supply them.

1756. (*Sir H. K. Storks.*) If he issues, in the first instance, the equipment of the hospital from head-quarters at Quebec to the out-stations, they would be in charge of the hospital-serjeant, independent of the barrack department?—Yes; but under the purveyor the inconvenience would be, that there would be no resident officer to inspect or to receive the stores when the regiment left, and that sometimes the authority of the purveyor over the regimental hospital servants, of whom the steward is one, would clash with that of the medical officer in charge.

1757. (*Mr. Alexander.*) How could they clash?—That depends very much upon the medical officer; probably he would no allow any interference with his steward.

1758. (*President.*) If the purveyor was made responsible for the whole supply of furniture, and the medical officer were relieved from duties of that kind, there would be then no confusion?—None at all; if the purveyor's duties were so defined that he was made responsible for the interior arrangements of the hospital, and had the charge altogether of the stores and the servants, and the cleanliness and everything, and the surgeon had merely to perform his professional duties.

1759. The purveyor being still obliged to provide everything that the surgeon thought necessary for the patients, and in case of his failure to keep the hospital in a proper state, the medical officer having his remedy by complaint against him?—Then there could be no difficulty: but you would have to extend the purveying establishment very considerably to carry out that system effectually.

1760. (*Mr. Stafford.*) How do you mean?—It would require a purveying officer at every sub-station to do that duty properly. At large stations there would be no difficulty. The Cape of Good Hope is probably as good an example as any; the sub-stations there are very numerous.

1761. (*Sir H. K. Storks.*) You would not have a purveying officer for a detachment composed of 50 men?—There would be the inconvenience.

1762. The purveyor would issue a certain number of stores to equip the detachment hospital, and he would give them to the hospital serjeant, who would be responsible to the purveyor instead of to the barrack-master?—That steward would require to be attached to the building to make the system work well; he would be the purveyor's serjeant in charge; if the detachment were removed in a hurry, and the steward was removed with it, and there were deficiencies, who would be responsible if there were no officer of the purveying department to take over the stores?

1763. (*President.*) Is there any one permanently belonging to the building?—The barrack-master or his serjeant.

1764. (*Sir H. K. Storks.*) Not for detachments?—There is always a barrack-serjeant at stations, I think, where there is a barrack.

1765. (*Mr. Alexander.*) Suppose a detachment of 50 men was going out and you were the purveyor at head-quarters, could not the supply for the sick of the 50 be issued and carried with them to the station they are going to, instead of from the barrack department?—I think that the proper way would be to make the hospital stores permanent with the building; if there were room for 50 men it would be to make the equipment in the house permanent, and when the troops move out, the purveyor might take over the stores, and retain them for a subsequent detachment.

1766. (*President.*) Would not the hospital serjeant hand them over to the other hospital serjeant who succeeded him?—He might not be present.

1767. (*Sir H. K. Storks.*) He must be; is not that the practice of the service?—That I cannot answer, I think not.

1768. (*President.*) If it is the practice of the service thus to do the duty of the barrack department, could it not be done in the same way for the purveyor's department?—I have a difficulty in answering those questions, for I have only been connected with the purveyor's department two years. My experience was in the East, and I have had no experience at home to

enable me to speak correctly of the proceedings of barrack-masters and their serjeants.

1769. (*Mr. Alexander.*) You stated that you thought it would be better for the service if the storekeeper or the barrack-master kept those stores; I ask you whether it would not be better for the purveyor's department to have a large hospital store in their charge, and not to go to the barrack department at all?—Upon that understanding you would have him to provide such things originally?

1770. Certainly; and have certain store rooms in each hospital where bedding, blankets, and everything connected with the hospital could be supplied from, without going to any barrack department?—I think it would work very well, apart from the question of economy.

1771. (*Sir H. K. Storks.*) Was not that the practice in the hospitals on the Bosphorus?—Yes.

1772. Did it not work well?—Yes, very well.

1773. Did it work better than if you had applied to the barrack department for the things?—Certainly, but the system was circumscribed. We had large hospitals, and were not troubled with many small detached hospitals.

1774. Could not you apply the same system to a large number of stations?—Certainly we could, but I fear that there would be inconveniences resulting in regard to some of the stations.

1775. (*Mr. Alexander.*) Do you think that there would be any inconveniences in large stations?—No; not where the troops were within a given radius, with a purveyor on the spot.

1776. What inconvenience do you think would arise?—From the transfer, where the purveying officer was not present, of stores from one detachment to another.

1777. If no inconvenience arises now where there is no officer of the barrack department present, why should it occur in the purveyor's department?—I see no reason, if such is the case.

1778. (*Sir H. K. Storks.*) You do not know, of your own knowledge, that such is the case?—I do not. I understand the principle to be, that where there is a body of troops, there will be an officer of the barrack department there. It may not be carried out in every instance, but I think that, as a rule, it will be found that a barrack-serjeant, acting under the barrack-master for the station, is in charge at each barrack.

1779. (*Dr. Andrew Smith.*) Why did you apply to me on Monday last for my sanction to purchase certain candles that were required for the 3rd regiment, which was about to embark for China?—Simply because I consider your authority to me to buy such articles, as paramount.

1780. Am I to understand you, that by your instructions I am the referee as regards anything that you consider to be wanted for a hospital; and that on my authority anything may be procured for the hospital, without the intervention of the War Office?—That was with regard to China. You will understand that my position is not at present defined, but I had verbal instructions from the Under Secretary of State to take your orders in all matters connected with China, and therefore, with regard to the supplies for hospitals in China, I have placed my propositions before you for your approval, and made such suggestions from time to time as I considered proper, and have taken your directions thereupon.

1781. (*Mr. Martin.*) The instance of China being an exceptional one?—The case of China being, with reference to supplies, the only one in which I have been engaged since I came home.

1782. (*Dr. Andrew Smith.*) If I sanctioned the supply, you would furnish it without reference to the War Office?—Yes.

1783. In case of anything else being required for the use of a hospital in camp, and the purveyor made an application to you for it, what course would you take? Would you then refer to me or to the War Office?—With regard to anything not connected with the army in China, for that is a special case, I would follow only the old system of taking the authority of the War Office for my guidance.

1784. Would the War Office decide at once whether you were to provide those articles or not?—I think they have in several recent cases, in which, for small articles, the purveyor has referred for authority to purchase, and they have allowed it.

1785. Without any reference to me?—Yes; but they were things that did not require a reference to the medical department. In the cases I refer to they were weighing machines, but anything that concerned the sick, such as the description of bedstead, would be referred to you for your opinion.

1786. Suppose that a medical officer were to ask to be allowed to be supplied with oil cloth to cover the surgery table, what would be the course in that case?—The surgeon would in that case either apply to the purveyor in the district, to the barrack-master, or directly to yourself, not to me; I believe the practice would depend much upon the surgeon himself, but in all probability he would refer the matter to you, and you would write to the War Office.

1787. Are you aware that an instance of that kind occurred lately, in which a surgeon applied to the purveyor to be allowed to purchase two door mats, and some oil cloth to cover the surgery table; in that case would the purveyor apply direct to the War Office or to you?—The purveyor would apply direct to the War Office for authority to purchase the articles.

1788. In that case who would decide?—The War Office would authorize the purveyor to purchase, or probably the store branch would be directed to supply the articles.

1789. With reference to this case, are you aware that instead of the War Office deciding one way or another they addressed me on the subject, and wanted my opinion whether those things were necessary or not?—I am not aware that they did so; I should think that it would be a question not requiring much reference.

1790. Are you of opinion that there is any established or fixed regulation in reference to carrying on those duties?—I believe there is not, except the regulations of the War Office itself.

1791. (*President.*) If there were a complete table attached to your instructions, showing what ought to be issued in a large hospital of a certain size, none of those confusions would occur?—None whatever. There is, however, a great want of some clear definition as to where the purveyor's province begins and where it ends, in providing such small articles.

1792. (*Dr. Andrew Smith.*) In answer to a former question, you stated that you thought that the medical officer ought to apply to the purveyor for whatever was necessary for the equipment of the hospital; are you of opinion that the medical officer, from his education and from his occupation, is a person calculated to say what quantity of brooms, and of all kinds of utensils, would be necessary for the working of the hospital?—Does the question refer to general or regimental hospitals?

1793. To either.—In a general hospital, with the purveyor residing within the hospital, I have no doubt he would be the most competent to give an opinion. In a regimental hospital, I should think that the surgeon at present would be the best officer to form a correct opinion upon the matter, there being no purveying officer; but there would be no necessity for the surgeon in either case to give an opinion on such a subject, if the internal conduct and guidance of each hospital was part of the duty of the purveyor.

1794. Do you not think that the purveyor ought to be held entirely responsible that every necessary for the hospital is there, without trusting to the medical officer?—Yes. I believe that the system would work well if it were so. I think that the purveyor, or his officer, ought to be held responsible for the proper equipment of the whole of the hospital establishment. He would have to make his annual inspections instead of the barrack-master and where he saw deficiencies

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he would supply them from his store; and in the case of damages he would submit the matter for directions to the principal medical officer on the station.

1795. You do not think that the medical officer ought to be required to make a requisition for an additional frying-pan for the kitchen, do you?—I think that the medical officer's professional services are far too valuable, and that he should not be required to perform such duties, but should be relieved as much as possible from every non-professional duty; therefore it would devolve upon the purveyor or some other responsible officer to perform the work, the purveyor being the most eligible under the circumstances.

1796. You have stated also, in reply to a question that was asked you, that you thought the surgeon and the hospital-serjeant in a general hospital should be held responsible for the bedding and other articles in the wards?—I answered that question upon the understanding that the purveyor has no right whatever to interfere in the internal management of a regimental hospital, and upon that principle I said that there should be a ward-master or a hospital-serjeant who should be and is now held responsible under the surgeon.

1797. Was it not with reference to a general hospital that you gave that answer?—With regard to a general hospital, my answer would depend altogether upon the power that the purveyor had over the servants. If he were supreme over them he could take as much care of the stores in each ward as the surgeon could possibly do; and he would also be as capable of seeing to the cleanliness and the comfort of the patients and the floors of the building, as the surgeon who makes his visits professionally.

1798. But the purveyor, as he at present exists, has a right to go into the wards of the hospital, and see that the different utensils and the bedding are correct?—As to the quantities.

1799. Yes; he at present holds the ward-master responsible to him; would it not be impossible and inconsistent to make the medical officer the responsible person between the ward-master and the purveyor?—The ward-master being the servant of the surgeon, if the surgeon gave him orders to take, for instance, a bed or utensils from one ward to another, he would have to obey that order. The purveyor in taking his inventory would find those things deficient, or it may be that they might be missing altogether, and the ward-master's answer to the purveyor would be that he removed them by the order of the surgeon, the surgeon would in that case be the responsible officer.

1800. The ward-master would still have them under his charge, and he would say, "They are not in this ward but in another," and then the purveyor would satisfy himself upon that point?—Quite so; in that case the things might be found, but in others they might be missing, and probably removed at the instance of the surgeon, in which case you must hold him responsible.

1801. The present practice is for the purveyor of a general hospital to be responsible for all the bedding and other utensils; he gives them out to the different ward-masters, and he holds them responsible to him, and if a ward-master was in any way to be troublesome, the purveyor's duty would be to go to the principal medical officer and state that such was the case, and his authority would be brought to bear; do you think that there would be any difficulty in that?—Generally speaking there might not, but I can conceive of instances in which there would be a collision. I think that the principle is a good one, either to relieve the surgeon altogether of the responsibility of the charge of the stores and of the conduct of the servants in the ward, or to make him entirely responsible for all. Any middle course is, I think, liable to objection.

1802. Suppose now, as is the case at Chatham, that a medical officer goes there to-day and in three days he is ordered away again; he has become responsible for two days, what means would there be of holding him responsible?—That is an exceptional case, and would require an exceptional arrangement. Chatham is a sort of depôt for medical officers.

1803. All general hospitals would be placed under the same circumstances, would they not?—I think not; but if so it would be absolutely necessary that there should be some permanent ward-master or other officer responsible to the purveyor, in which case it would be necessary for the purveyor to have, as is given him by the old hospital regulations, the supervision of the hospital servants.

1804. Is it your opinion that, for instance, at Chatham it would be practicable for the purveyor to exist as a separate and independent officer in that establishment, and not amenable to the authority of the principal medical officer?—If the principal medical officer is the governing body of the hospital, the purveyor and his officers should act under his direction; whoever is the governing body should have entire control over everything within the hospital. The question, I think, is, who is the governing body of the hospital? In 1820 the commandant was the governing officer; since this rule has become obsolete there is nothing to show that the principal medical officer is supreme in the hospital, but the practice has been, I think, gradually to bring the ruling power within the principal medical officer. I think that that has been the gradual development of the system since the commandant ceased to exist.

1805. Supposing that there was anything connected with the medical duties to enable them to be properly performed, and that the principal medical officer considered that the purveyor ought to take such and such steps, or obtain such and such articles; and suppose that the governing body, the commandant, did not take the same view with the principal medical officer; what then would be done?—I think that then, the commandant being the governing body, the purveyor should not have the power to act upon the medical officer's order.

1806. Then the principal medical officer, who might be a man of perhaps 40 or 50 years' experience, would not be able to obtain for the sick in his establishment that which he considered necessary, because the power of considering whether it was necessary or not would be placed in a military officer of perhaps only one third of his service?—You are supposing one side of the case. When I say that there should be a governing body, and that I think that governing body should be the commandant, I conceive that for the good working of the system you would require most excellent officers, and therefore the best men on the half-pay list of high rank. I do not think that anyone should be the commandant of a hospital under the rank of a field officer.

1807. (*President.*) Would not the instructions to the governing person probably lay down directions to him that he was in no way to interfere with any question of medical treatment, but that the medical officer should be supreme?—I think it is so stated distinctly in the old regulations. "The medical officer "is to have the sole superintendence of the profes- "sional arrangements of the hospital, and all returns "and reports from the other medical officers are to be "made to him." Under that rule, I think that no commandant would say to the principal medical officer, "You are not to give this or that to a patient;" nor, with proper regulations, would he interfere with him in the discharge of his duties.

1808. Supposing that the principal medical officer considered the means of cooking were not sufficient, and that additional means of cooking were required, in that case who is to decide?—My opinion is that the board should decide.

1809. Who decides it now?—I think that now, as to the means of cooking, the principal medical officer would request the purveyor to provide proper cooking utensils, or the latter would probably take the initiative himself in the matter, as he would no doubt be the first to find out the want.

1810. He cannot order the purveyor to make an alteration in the hospital ?—No.

1811. The purveyor can only apply to the barrack-master, or the engineer, and it must come to the central authority ultimately to decide ?—Yes, under the present regulations.

1812. Under the supposed governor of the hospital, would not the principal medical officer, if he could not get justice done to his patients, in the same way write home and apply to the central authority ?—I think that the governing body, or the commandant, should be supreme, but that all questions of that kind should be decided by a board in the hospital, composed of the three different departments, and if the principal medical officer conceived that the board did not decide properly upon his application, he could refer to the head officer of his department in London through the commandant.

1813. Do not you consider that by these references to the superior of each department, and ultimately to the central authority here, the Secretary of State is virtually the governor of every military hospital ?—Quite so ; that is to say, he individually is not, but his department is, properly speaking, so.

1814. Though not being on the spot, he has to judge of everything by correspondence ?—Yes.

1815. (*Dr. Andrew Smith.*) Are you aware that about the year 1820 the Commandants of Hospitals and the Commandant-General of Hospitals were discontinued, in consequence of its being found that there were such constant collisions between them and the principal medical officers of the hospitals, that the duties could not be carried on satisfactorily for the good of the soldier ?—No ; I am not aware that that was the cause of the breaking down of the system, but the necessity for a collision between the governing body and the medical officer, or between the governing body and the purveyor, if the regulations were properly defined, would not exist, I think. I do not consider that the governing body or the purveyor should have any right to interfere with the professional treatment of the sick ; and that principle being laid down, there would be no necessity for collision in that respect.

1816. (*President.*) Are you acquainted with the system in the naval hospitals ?—No.

1817. Do you know that there is a superintendent at Haslar ?—Yes, I do ; he is a naval officer.

1818. And that the hospital is remarkably well governed ?—Yes. I believe that in the civil hospitals the governing officer is a civilian, but not a medical officer. I presume that the system works very well there ; there is no clashing between the medical authorities and the others in the hospital ; and I cannot conceive why there should be any clashing, if a military man were the supreme authority in a military hospital. I think it is necessary for the good of the service, that there should be a military man at the head of each general hospital.

1819. (*Dr. Andrew Smith.*) Can you imagine that every military man will take the same view of what is necessary that a medical man will take, and that he will yield to the medical officer's opinion, particularly if he has any reason (and there may be reasons existing) why he should not take the same opinion ?—If he were placed in the position of commandant of the hospital, I would consider that he was responsible for any very great expenditure in the hospital, and in that respect he would probably interfere with the recommendations of the medical officer ; but with regard to the treatment of the sick, the diets and extras given to them, the amount of accommodation, the cleanliness of the wards, or any question that involved health, I do not think that the commandant or any man of ability would interfere with the arrangements of the surgeon. I think if the commandant had common sense at all he would be guided by it, and would regulate such things as were in his province alone. It would be necessary and proper, if there was any improper conduct on the part of the medical officer or purveyor, for him to step in and request them to attend to their duties ; but otherwise he ought not to interfere with the professional opinion of the medical officer in his treatment of a patient.

1820. Supposing that there was a cess-pool or two attached to the hospital, and that the medical officers of the establishment considered that those ought to be emptied at least every two months, do you think that the military officer would in all cases agree to their proposition and have it done ?—It is a very difficult question to answer, but I should think that it would depend altogether upon whether the commandant saw the necessity of it. With regard to a cess-pool there should be no difficulty.

1821. (*President.*) Under the present system, are such requests on the part of the medical officer always attended to ?—No ; they would be more likely to be attended to under the system of a commandant as supreme.

1822. Did you hear the statement made by Mr. Pratt the other day, that under the present system such requisitions may be made and be unattended to for years ?—Yes, it is quite possible ; but with power vested in the commandant to require the engineer to perform certain work these delays would probably not occur. There should be a certain limit of expense for repairs, but if the board decided that they were necessary, power should be vested in the commandant to require the engineer to perform the work.

1823. If he considered them necessary ?—If the board considered them necessary ; but I should think that in a case of the kind referred to by Dr. Smith the opinion of the principal medical officer would be taken as the most important. His opinion upon a sanitary point I would consider much better than mine, and if I were individually concerned I would waive my own judgment to that of the medical officer ; but if it were with regard to the enlargement of the hospital, or any other question upon which a military or a civil officer is equally able to decide with the medical officer, in that case I should think that the judgment of the military officer would be quite as good as that of the medical officer.

1824. (*Sir H. K. Storks.*) When you were in the East, who was the paramount officer ?—The general officer commanding I consider was so.

1825. Were there many references made to him about the hospitals generally, particularly about buildings and the question of drainage ?—Not in my own personal experience ; I believe there were sometimes.

1826. Did you ever know any collision take place, or difficulty ?—I think not ; I know that there was nothing recommended there by the medical officer in my time which was not carried out as far as workmen could perform it. There were, of course, in a country such as Turkey, delays occasionally ; but taking all the service into consideration, I do not think that the delays were greater there than might have been expected.

1827. (*President.*) Would not the medical officer always have the option, as he has now, if justice was not done to him, of referring to the chief of his own department at home, and bringing the subject before the Secretary of State ?—Quite so ; he would have an ultimate appeal ; and I think that then the question, being considered by disinterested parties, would very likely be solved in a fair and proper way for all concerned.

1828. (*Sir James Clark.*) Could he make that application directly to his chief, or must it go through his commandant ?—I think decidedly that he ought to have the power of appeal, and that the commandant should not have any right to do anything more than pass on the appeal, with such remarks as he considered necessary. He should, as the head of the hospital, know what appeals go forward, but not stop them.

1829. (*Mr. Alexander.*) Do you consider that it is necessary to have the name of every patient in the hospital written on the daily diet-table ?—With regard to a question which was put the other day

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and the answer I heard given here, I yesterday prepared a diet-roll, by which I think that difficulty is entirely obviated.

1830. I am talking about the present practice?—By the present practice it is so, but it is not necessary that it should be so. The diet-roll, I think, might be prepared on Sunday, with the names correctly entered, and the diets could then be issued during the week, without any additional names except those that are newly admitted; and I have prepared a diet-roll which I think would answer that purpose.

1831. (*President.*) It used to be a monthly diet-roll, did it not?—Yes.

1832. (*Mr. Alexander.*) Might not monthly diet-rolls, as formerly, be adopted, thereby saving an immense amount of writing?—I would do away entirely with monthly diet-tables.

1833. Do you know the one that I allude to?—Yes, I do, I have it here (*producing the same*). The monthly diet-table is only for meat diet, it does not include extras; I would have merely the weekly diet-roll.

1834. Why not for a month?—Because the form of diet-table is not complete. The roll must be prepared for the purveyor.

1835. Why cannot he take the returns that he conceives necessary from the monthly diet-table?—It would be impossible, as no extras are stated in the monthly diet-table; but in the form I have proposed the system can be carried out for a month upon the same principle, by merely putting in more fly-leaves, but the purveyor should have one weekly. The only difference between the one that is rendered to the purveyor and that which is kept in the hospital would be, that the latter might be made large enough for a month and bound in a book to lie on the ward table for the patients to examine when they thought proper.

1836. (*Sir Thomas Phillips.*) But the purveyor should be supplied with his copy weekly?—Yes.

1837. There must be for him a separate weekly diet-roll?—Yes, to be made up and delivered to him weekly. There are other returns, which are now prepared by the surgeon, which I confess I think it is not his duty to prepare, and therefore I would propose to abolish them. I have brought with me some of the forms which are used in my department, and which I beg leave to hand in to the Commissioners. (*The same were delivered in.*)

The witness withdrew.

J. C. Steele, Esq.

JOHN CHARLES STEELE, Esq., examined.

1838. (*President.*) What position do you hold in Guy's Hospital?—I am superintendent of Guy's. I have the general management of the affairs of the charity under the committee of management.

1839. You are a medical man yourself?—Yes.

1840. But you do not hold your office in virtue of being a medical man?—No.

1841. Was your predecessor a medical man?—No.

1842. Therefore, I presume you perform none of the duties of a medical officer within the hospital?—Not of a special character, beyond the admission of patients, in which I am generally called upon to distinguish which patients are proper cases for admission into the hospital, to distinguish between the surgical and medical and other cases.

1843. That is, being by accident a medical man, it has been found convenient for the hospital to impose duties upon you which would otherwise fall upon one of the medical men?—Yes.

1844. It is not the natural duty of your position as superintendent?—It is not.

1845. As your predecessor was not a medical man, your successor might not be?—He might not.

1846. What had been your previous experience in hospitals?—I have been connected with hospitals nearly all my life. I was bound apprentice to the Edinburgh hospital and resided there for five years during my studies, and afterwards I was appointed superintendent and apothecary to the Glasgow hospital, and resided in that hospital for six years. From that I came to Guy's, and I was there appointed superintendent.

1847. Will you state in outline what are the duties which you perform at Guy's?—I have here the regulations, which have been drawn up since I went there. "The superintendent shall, under the treasurer, have the control of the household, and shall be responsible to the treasurer for the good order and government of the household affairs, in accordance with such regulations as now exist, or shall be issued by the treasurer and governors from time to time. He shall devote his whole time and attention to the duties of his office, and shall not absent himself from the hospital for one day, without the permission of the treasurer. He shall visit the several wards and other departments of the hospital at least once every day, and see that the bye-laws and standing orders are strictly complied with. He shall exercise a general superintendence over all persons employed within the establishment, and shall engage and suspend, at his discretion, all the male servants, with the exception of those appointed by the court of committees. He shall report to the treasurer, at the weekly meeting, the names of all persons so hired or suspended, together with the cause or causes thereof. The superintendent shall report weekly on the state of the house, stating the number of patients admitted, discharged, or dead, during the previous week, specifying whether medical, surgical or lunatic; and he shall keep a narrative of all occurrences relating to the business of the hospital, which he may consider of sufficient importance to communicate to the treasurer and committee for taking in-patients, and make such observations or suggestions thereon as he may think conducive to the welfare of the establishment."

1848. What staff have you under you?—For the peculiar duties attached to my office, I have two clerks in my office.

1849. Have you a steward under you?—I have a clerk who has charge of the supplies.

1850. Who does the duty of steward?—Yes.

1851. What number of beds have you in your hospital?—540.

1852. Do you include in that number the lunatics?—Yes. There is a small establishment for lunatics.

1853. (*Mr. Stafford.*) How many beds are occupied in the hospital?—Generally speaking there are about 460 beds occupied daily, on the average, throughout the year.

1854. (*President.*) You are very full now, are you not?—We are; we have about 500 patients at present in the hospital.

1855. Is it the duty of any particular person to attend to the ventilation of the wards?—It is the duty of the clerk of the works to attend to all the works and improvements about the hospital, and it is the duty of the sisters of the wards to attend to the ventilation of the wards.

1856. The sisters are held responsible for the cleanliness of the wards?—Yes; they are held responsible for there being free ventilation.

1857. And for the cleanliness of the patients?—Yes.

1858. And the care of the furniture?—Yes, and to take charge of the diets, and the bed linen of the wards.

1859. Is it the duty of any particular person to attend to the state of the water-closets daily?—Those

sisters have the full charge of the wards, and it is the duty of a man to go round the hospital once a week to examine into the state of the water-closets.

1860. Whose duty is that?—The clerk of the works of the hospital, a kind of engineer. He is resident in the hospital.

1861. For the sanitary condition of the hospital, you trust to the reports of the nurses, and the clerk of the works?—Yes, and from my own superintendence. I have to pass through each department daily, to notice whether there are any deficiencies in any particular department.

1862. Are the supplies attended to entirely by your clerk?—Entirely.

1863. Does he make contracts?—He makes contracts with the parties who send us the provisions.

1864. Are the contracts made on your recommendation, or your clerk's?—My own.

1865. Do they depend a great deal on the recommendation of the clerk?—Yes.

1866. Who is it that makes the payments?—The accountant makes the payments by money received from the treasurer. The larger payments are made half yearly, and the small ones are made quarterly.

1867. You represent in the hospital the committee of governors when they are not actually sitting?—Yes; I make a weekly report to them.

1868. Do you interfere in any way with the treatment of patients?—No. We have one resident house surgeon, and a resident apothecary.

1869. Whatever is ordered by the medical man is supplied without question?—Yes. Such things as surgical apparatus, if not in common use, or medicines, if of very great value, are sometimes not supplied.

1870. In case a thing is pressed for by the medical officer, where does the appeal go?—To me, in the first instance, and I take it then to the treasurer and the weekly committee. This rule refers to that:—"He shall insert in a book, to be laid before the treasurer, a note of all medicines, surgical instruments, stationery, articles of diet, and everything that is needed for the supply of the hospital. It is expressly ordered that no article shall be got for the hospital unless with the sanction of the superintendent, and under his signature, previously obtained."

1871. That is for the financial statement of the establishment?—Yes.

1872. The medical officers exercise no authority in the hospital except with regard to the treatment of the patients?—Except with regard to the treatment of the patients, they have no authority whatever.

1873. They expect to find everything ready to their hands?—Yes, they do so.

1874. If not, they would make a complaint to you, I presume?—Yes. Whatever recommendation they choose to make is generally attended to by me or by the committee.

1875. Practically, does it often occur that they apply for instruments or for diet which you consider too expensive?—Very seldom indeed; we generally agree to their wishes with regard to diet of all kinds.

1876. I suppose there might be some hesitation when something new was introduced at first?—Yes, something that might be introduced for the first time and of considerable value, besides being of questionable utility; the matter is referred to the committee, and they decide whether it shall be given or not.

1877. You supply them with microscopes and everything of that kind, I suppose?—Everything that has any connexion with the medical school of the hospital is supplied from funds which are entirely independent of the hospital funds.

1878. Who superintends the cooking; is that under your clerk?—That is under the housekeeper's care.

1879. The matron?—No. The matron in Guy's hospital has charge of the servants, the nurses, and the sisters, and the housekeeper has charge of the kitchen department, and attends to the diets.

1880. Your washing is done in the hospital, is it not?—Yes, entirely.

1881. By your own servants?—Yes.

1882. Does that answer well?—Yes. It is very efficiently done, and we can do it much cheaper in the hospital than we can outside the hospital.

1883. Will you describe the process by which the diet-rolls are made up, and the check which you have upon the provisioning of the hospital?—Each patient has a bed-card placed above his bed, in which all the medicines prescribed are put, and also the diet. There is a separate column for the diet. The medicines are put in this column (*pointing to the form*). The diet is mentioned once, and if a change is made it is noted; probably the patient may be taking the same diet for a month upon the same order.

1884. How many diets have you on that table?—Only one here, but on the diet-roll we have got five. This is the diet-table (*handing in the same*). We have five different kinds of diet.

1885. Do they enter from that bed-ticket the particular diet which a patient is to have for the day?—Yes.

1886. How is that conveyed to the steward?—The sister of the ward, who has charge of it, writes out on a piece of paper daily the number of patients on particular classes of diet, the number upon extras, but not the names of the patients, because each patient has a separate number. We uniformly number the patients instead of recognizing them by name, and these are entered in this list (*handing in the same*). These lists are taken to the housekeeper by the sisters, and transferred by her to the score. She then makes up the general returns for the day from this score, and sends the same to the butcher who supplies the meat.

1887. The housekeeper?—Yes, she does, and her accounts come into the steward's office daily.

1888. She orders upon a standing contract?—Yes.

1889. (*Sir Thomas Phillips.*) She ascertains the quantity that is wanted?—Yes. Probably there would be twenty of these papers sent to her, and she transfers the totals from the papers on to her slate, and she can tell at a glance how many diets are required for each ward, what number of pounds of meat are required.

1890. What is your check upon her that she does not order more than is wanted?—We have a return from the steward's office made up from those papers also, and we can compare at any time the amount that is said to be required.

1891. Do you compare them habitually?—No, only occasionally; we put so much confidence in this person.

1892. Do you know what the cost of your hospital is, whether it is economically conducted; take the diets first?—Yes.

1893. (*Sir Thomas Phillips.*) Do you do what is done in some establishments of the kind, that is, analyse the distribution of the supplies, so as to show that there is so much meat distributed on full diet each day, and so much on half diet, and so check the aggregate quantity by the number of patients on each particular class of diet?—No.

1894. But that would give a perfect check, would it not?—Yes. If it were required we could do it very easily, but we never have done it.

1895. (*President.*) You do not have recourse to that check, because, I suppose, you can judge pretty well whether there has been any extravagance or not?—Yes.

1896. What do the diets cost upon an average per day?—I can tell you what the patients cost daily.

1897. (*Mr. Stafford.*) Including the medicines?—Yes, including everything.

1898. (*President.*) Including the salaries of the attendants?—Yes, and also of the medical officers. The expense of each patient in Guy's Hospital has been 4*l.* 12*s.* 6*d.* during the last year. The average number of days resident was 33.

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1899. (*Sir Thomas Phillips.*) What is the cost per bed?—The cost per bed per day of each would be about 2*s.* 9½*d.*

1900. That is nearly 50*l.* a bed?—About 50*l.* Taking 460 patients per day, the daily expenses of the hospital for the maintenance of patients would amount to about 63*l.* 5*s.*

1901. Cannot you tell us how much it is per bed?—No; the fairest way of calculating that would be to take 460 patients, as the average number resident daily in the hospital, without reference to the number of beds the hospital contains.

1902. (*Sir H. K. Storks.*) Have you 460 patients as the average number in the hospital?—Yes, 460 has been the daily average during the past year.

1903. (*Sir James Clark.*) Is the clerk of the works permanently attached to the hospital?—Yes; he is resident within the hospital, and he has a staff of some 20 workmen connected with him.

1904. Are you quite satisfied with the ventilation of the hospital at present?—Yes. There are two hospitals at Guy's; one is ventilated by the common free method—that is, the old one which was built by Guy; and the other is ventilated upon a new principle by Mr. Sylvester, an approved artificial and mechanical principle; but the medical men are not so satisfied with the new principle as they are with the old.

1905. Is the new system an expensive one?—Yes, it has been attended with considerable expense.

1906. (*President.*) Except that, the construction of the new hospital must have been cheaper than the old, for you have four sets of beds between two outside walls?—Yes.

1907. (*Sir James Clark.*) Do cases of erysipelas occur in the wards?—Very frequently in the surgical wards, but not in the medical wards.

1908. Have you any cases of pyæmia?—Yes, cases of pyæmia occur very frequently in the treatment of severe surgical operations, and render them very fatal.

1909. Do you find the cases of erysipelas as frequent in the old hospital as in the new?—The new hospital is entirely set apart for the treatment of medical cases, and the old hospital for surgical cases. We have very few cases of erysipelas among the medical cases. When it springs up in a surgical ward we frequently transfer the affected patient to the medical ward.

1910. Have you cases of diarrhœa occurring among the nurses?—No; I have noticed little or none in Guy's since I have been connected with it, as occurring amongst the officials.

1911. Are they attacked with fever occasionally?—I have known only of two instances in which the nurses have been attacked with fever in the treatment of fever cases. Our fever cases are mixed up with the other patients, and I have known but one instance in which a patient was attacked with disease taken from a person in the next bed suffering from fever.

1912. What is the distance between the beds?—There are about six feet between the beds.

1913. Have you many cases of fever admitted?—In some seasons we have a considerable number. At present the number of fever cases amounts to twelve or fourteen, and at present in the hospital those cases are distributed amongst the others.

1914. (*Sir Thomas Phillips.*) Is the fever peculiar to the locality?—No, it is not prevalent in the locality.

1915. Is it low fever?—Different forms of typhus.

1916. (*Sir James Clark.*) Is the drainage perfect?—It is very good.

1917. What cubical contents do you allow for each patient in the wards?—There is no regular system but we consider that the beds should never be placed closer than six feet apart.

1918. (*President.*) What does that give you in cubical contents?—We have wards of different sizes. I think the average amount of room is about 1,600 cubic feet in the old building, and in the new building it extends to as much as 1,800 or 1,900 cubic feet.

1919. What is the proportion of the different patients in your hospital, of the surgical and the medical cases?—Out of 460 cases there are about 260 surgical cases, including under that head diseases of the eye and venereal diseases, and the remainder are medical cases.

1920. Have you any special department for the treatment of female diseases?—One ward is set apart for the treatment of females with diseases of the womb. With regard to midwifery cases we have a large lying-in charity attached to the hospital for the use of pupils; there are about 2,000 women annually delivered from this charity.

1921. Have you a special ward for children?—No, but the number of children treated in the hospital is very large; at one time it was the rule to have wards set apart for children, but it has been found very much better to mingle them in the female wards with the patients; the female patients take charge of them, and they are much quieter, and get on better, without their mothers.

1922. What is the earliest age at which you admit them?—We take them in as early as one week old.

1923. What number of lunaties have you in your establishment?—Only 15 lunatics now: we had at one time 24; they are all incurables, hopelessly insane, and they must be, according to Mr. Guy's will. But the governors do not intend to continue to take in any more lunatics.

1924. What is the number of your medical officers?—There are four senior physicians, who have the charge of the medical wards, with two obstetric physicians, making six senior physicians.

1925. (*Sir Thomas Phillips.*) You are now speaking of the honorary officers?—No; they are all paid at Guy's, with the exception of the treasurer.

1926. (*Sir James Clark.*) How many surgeons?—We have three senior surgeons in connection with the surgical wards, and one ophthalmic surgeon.

1927. How many assistant physicians and surgeons are there?—Three assistant-physicians, and three assistant-surgeons.

1928. You have not, then, an assistant-physician to each physician?—No, because the appointment of the fourth senior physician is only temporary; it is intended that it should die out.

1929. What number of clinical lectures are given?—About 50. All the pupils are allowed to report, but we have clinical clerks attached to the clinical wards; each physician has two; there are, therefore, eight clinical clerks attached to the two clinical wards, and that appointment is considered a higher office than the regular reporter of cases. From their reports we select the best pupils to fill the best offices.

1930. Are the clerks appointed for any particular time?—Yes; for three months in the summer, and for six weeks in the winter.

1931. Who examines the reports?—There is a medical council formed to examine the reports, and to select, according to merit, the best pupils to fill the highest offices in connection with the charity—the clinical clerks and dressers.

1932. (*President.*) Do they write down a description of the disease, the treatment, and the general conclusions?—Yes, the history of the case, noting the daily symptoms of the case in the hospital.

1933. Do the pupils select any case that they like?—No, they take their week about, according to the number of persons admitted; each clerk takes his week in rotation, and he writes out the previous history with the present condition of each case admitted.

1934. Does the pupil select which case he pleases?—No; the physician orders him to do that.

1935. (*Sir James Clark.*) What number of dressers have you?—Twelve; there are four attached to each of the senior surgeons.

1936. Are they appointed in the same manner?—Yes, they are selected in the same manner.

1937. Are they selected for merit?—Yes, they are.

1938. In that manner do all the pupils of the hospital go through those two classes, the dressers and the clerks?—They cannot all be appointed to the office of dresser; there are only twelve appointments every six months; the number of the pupils attending will be about 180, and it is therefore impossible that they can all attain those offices.

1939. Is it not very desirable that they should do so?—Yes; but if we increase the number it would not give each dresser a sufficient amount of work to do.

1940. (*Sir Thomas Phillips.*) You mean that it would be desirable for the student himself?—Yes, very desirable indeed for the student in the course of his education.

1941. Is any other instruction given to the pupils?—Yes; clinical instruction is given to the pupils in the winter. Each of the senior physicians takes charge of two wards in the winter, and he selects cases for those wards which are of great interest and value. Upon these he makes his comments daily in the wards. The system of clinical instruction is carried out remarkably well in Guy's—better there than in any other hospital that I have seen.

1942. (*Sir James Clark.*) Are all the physicians going on at the same time with clinical lectures?—No; each physician takes two months in his turn during the winter; last year they each took six weeks.

1943. The ordinary physicians do not give any clinical instruction?—Yes; they make a few remarks at the bed-side of each case, and their visits are always attended by the pupils.

1944. How and by whom are the medical officers appointed?—By the governors.

1945. By the whole of the governors?—By the whole body of the governors.

1946. What is their number?—The number is 60, but it is very rare that more than 20 would attend any meeting.

1947. Are the medical officers consulted about the appointments?—They are not consulted.

1948. Is that a good plan of appointing medical officers?—Both the physicians and the surgeons are selected from the medical school of the hospital. It appears that the governors have never gone beyond their own school; but I think if they went further and selected men from the other schools they might possibly obtain a superior class of teachers to fill the various offices in the hospital.

1949. Are your physicians and surgeons always selected from the assistant physicians and surgeons of the hospital?—As far as I know they have been, with one exception. There was one assistant-surgeon who remained, I believe, all his lifetime as assistant-surgeon.

1950. Is it necessary that a man should have been an assistant-physician or assistant-surgeon before he becomes a physician or a surgeon?—I believe not necessarily so, but the rule has always been so.

1951. For what period are they appointed?—For life.

1952. Are the assistant surgeons and physicians also appointed for life?—The assistant surgeons and physicians are all life appointments.

1953. Do you think that that is a good plan?—No; I think it would be preferable if they were appointed for a shorter period, say for 10 or 15 years, and by the end of that time it would be known whether they would be of further use to the medical school, or to the hospital.

1954. (*Sir H. K. Storks.*) Making them eligible for re-appointment?—Yes.

1955. (*Sir James Clark.*) Would that be a better arrangement for the institution?—Yes; and not only for the institution, but better also for the medical school in connection with the institution, because from the body of medical officers the teachers are always selected.

1956. Have you a pathologist?—Yes, who is also an assistant-physician, and who is connected with the museum.

1957. Does he give instruction to the pupils in pathology and morbid anatomy?—Yes, daily in pathology in the post-mortem room. He also gives a few lectures upon morbid anatomy in the general theatre; but it is quite an accident he is an assistant-physician at the present time, because the appointment is singular in itself.

1958. Do you think that the clinical instruction given at Guy's is upon the whole given as well as in any other hospital?—I think it is given upon a very first-rate plan; it is attended during the summer months as well as in the winter. The assistant-physicians during the summer months always give clinical instruction; they have then charge of the two clinical wards.

1959. You consider, I presume, that every pupil should be instructed at the bedside of the patient individually, so as to be able to treat diseases?—I think it is very desirable that every student in medicine should be instructed personally in the nature of disease by the bedside of the patient, and also that he should act as dresser, and be able to manipulate carefully.

1960. Do you think that any man should be licensed to practise medicine without his qualifications having been tested practically at the bedside of the patient?—It is the system throughout the country that there is no examination of that kind required, but I think it would be very desirable if it were otherwise. With the exception of the India Board, I believe none of the examining boards require a student passing to be examined in manipulation by the bedside.

1961. Do you not think that every physician and surgeon in the hospital should be required to give instruction to the pupils at the bedside of the patients?—Yes, every one who has patients. The chief duty of the assistant-surgeons is to attend to the out-patients' department of the hospital. I think it should be the duty of every medical officer at the hospital to give instruction to the pupils; it is usually done.

1962. (*Sir Thomas Phillips.*) Is your out-patient department a very large one?—Very extensive.

1963. What number do you relieve in a year?—36,000 last year.

1964. (*President.*) Is the cost of supplying them with medicines included in your gross estimate?—No, I deducted the amount of medicine likely to be supplied to them from that charge.

1965. Is the new system an expensive one?—If the question alludes to the arrangements of the new hospital, I would say that from the greater uniformity in the size of the wards, and the more equable distribution of labour, which is the consequence of the arrangement, that the expenses attending it will not be found so great as in the old buildings.

1966. (*Sir James Clark.*) What number of nurses have you in your hospital?—We have three classes of nurses; one class is called the sisters, who have chief charge of the wards, and who have charge of the regular day nurses and night nurses; the number of sisters is 18.

1967. Have you more than one sister in a ward?—No, never more than one. The number of day nurses is 27, and the number of night-nurses is 23. Then we have a class of people called helpers or ward servants, who scrub and clean the floors.

1968. (*President.*) The nurses never do that, do they?—They do a little in that way, but we are trying to separate the nursing work as much as possible from the cleaning.

1969. (*Sir H. K. Storks.*) Are the ward scrubbers women?—All; we have no male nurses.

1970. (*Sir James Clark.*) What is the size of the wards?—I calculate that one nurse should have charge of 24 patients.

1971. (*Sir Thomas Phillips.*) And also the sisters?—Yes, but their wards are very different in size; in the

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new building the wards hold 50 patients, and there is one sister who has charge of those 50 patients, with four nurses under her.

1972. (*Sir James Clark.*) Two day nurses and two night nurses?—Yes.

1973. Are all the nurses permanently resident?—Yes, but they are not boarded.

1974. (*Sir Thomas Phillips.*) Do you refer to the night nurses?—Neither the night nor the day nurses are boarded; they go out and bring in their provisions with them.

1975. (*Sir H. K. Storks.*) Where do they cook them?—They cook them in the wards.

1976. (*President.*) Is that a good plan, do you think?—No, it is not.

1977. (*Sir H. K. Storks.*) Do they sleep in the wards?—No, they do not.

1978. (*President.*) Have they separate apartments?—The nurses have dormitories in different parts of the building, entirely separated from the wards. The sisters all sleep in the wards, or rather in rooms attached.

1979. (*Sir James Clark.*) What duties do you allot to the sisters?—They have the general superintendence of the wards, and they are responsible to the physicians for the medicines and wines and for the cleanliness of the patients. They have charge of the ward furniture and the bed linen, and also, if they wish to be very assiduous in their duties, they correspond with the friends of the patients with regard to their comforts.

1980. How are they paid?—At the rate of 50*l.* a year.

1981. From what class of life do you generally obtain your sisters?—We try to get them from as good a condition in society as we can. There are several widows of professional men, governesses, teachers, and reduced ladies.

1982. (*Sir Thomas Phillips.*) Besides the 50*l.*, do you give them rations?—No, only an allowance of porter, a little allowance of milk, and no clothing nor washing.

1983. (*Sir James Clark.*) When they become old, do you pension them?—We have a superannuation fund, and they pay quarterly into that a certain amount. The governors also give a similar amount, which provides them with a retiring allowance of 12*s.* a week at the age of 65.

1984. Then they are, generally speaking, pretty well educated people?—Commonly speaking, they are rather of a higher class than the ordinary nurses.

1985. What is the general conduct of your nurses?—That depends a good deal upon the superintendence of the sister; generally speaking it is pretty fair.

1986. Does your system of nursing work well?—Remarkably well.

1987. There is no improvement that you could suggest?—I think it would be a great improvement to introduce male officials, or orderlies, into the surgical wards of the hospital; they are sometimes much required, and there are many duties that you can scarcely ask a woman to perform in connection with venereal cases, and also with bad surgical cases; the men, when helpless, are very heavy weights to lift in and out of bed, and it would be very useful if we could obtain the services of one or two orderlies for such cases.

1988. (*Sir Thomas Phillips.*) Do not the dressers dress the cases?—Yes, but they do not attend to the shifting or the cleaning of the patients; they do not usually dress very bad cases, such as extensive burns.

1989. Is your treasurer the administrative officer, and the person who has absolute control in the hospital?—Yes, he has absolute authority in the hospital; he is our executive.

1990. (*Dr. Andrew Smith.*) What is the exact object of this bed-head ticket?—The object of it is to get a record of the medicine prescribed, and the treatment that is adopted; it goes to the apothecaries' shop, as well as to the kitchen.

1991. Is that the only record that you keep of the patients' disease?—There is also a record kept by the reporters in their books, and that always remains in the hospital.

1992. If anything was wanted to be ascertained with reference to John Scott, could it be ascertained?—Yes, the official record is kept in a book at my office.

1993. And the nature of the disease?—Yes; besides that, I should add that over each patient's bed there is a card that states the nature of his disease, his name, the date of his admission, the date of his discharge, and the result.

1994. Is not that liable to get lost or mislaid?—It is always fixed in a little pasteboard case, and is not liable to be mislaid.

1995. When it goes to the pharmacy, does it generally come back to the patient's bed-head?—It is carried by the sister to the pharmacy, where it is entered by the apothecary, and it is taken away again by the sister.

1996. (*Mr. Alexander.*) You do not keep a register of all cases in the hospital?—Not a detailed account of every case; the majority are pretty well kept. There is always a register kept of every case.

1997. But there is very little writing in those cases, I presume?—Very little.

1998. And the students keep them, I suppose?—Yes, except that the physicians sometimes keep notes in their private books.

1999. (*Dr. Andrew Smith.*) Do not they keep the records of the clinical cases?—The cases in those wards are kept very much better.

2000. Do the books in which those are entered remain as the property of the establishment?—Yes.

2001. (*Mr. Alexander.*) Those cases are detailed more fully?—The clinical cases are detailed very minutely and extensively.

2002. They are compelled to detail each case?—Yes, and they are compelled to read it aloud to the physician when he goes round each day.

2003. On the discharge of a patient, are remarks made with regard to the treatment, whether it has been successful?—The result is always mentioned under four heads, cured, relieved, unrelieved, died.

2004. Do you enter the post-mortem examination at the foot of the case?—Sometimes it is. There is also a very accurate record kept of the post mortem by the pathologist, besides that which is kept by the clinical clerk. This is the form in which the report is made (*the same being handed in*).

The witness withdrew.

Adjourned to Friday next, at One o'clock.

Friday, 22nd May 1857.

PRESENT :

The Right Hon. Sidney Herbert, M.P.	Sir Thomas Phillips.
Augustus Stafford, Esq., M.P.	Sir James Clark, Bart.
Col. Sir H. K. Storks, K.C.B.	James R. Martin Esq., F.R.S.
Dr. Andrew Smith.	Dr. John Sutherland.
Thomas Alexander, Esq., C.B.	

President, The Right Honourable SIDNEY HERBERT, M.P.

John Robert Taylor, Esq., C.B., examined.

J. R. Taylor, Esq., C.B.

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2005. (*President.*) You are deputy inspector-general of hospitals, are you not ?—Yes.

2006. Where are you stationed now ?—At Fort Pitt.

2007. Have you all the army hospitals at Chatham under you ?—Yes.

2008. There are three hospitals, are there not ?—Yes.

2009. How many patients are there in them ?—I think there are 450 just now.

2010. (*Mr. Stafford.*) How are they divided ?—The general hospital at Fort Pitt is for invalids.

2011. What are the numbers in that hospital ?—At present 123. The garrison hospital is for the sick of the provisional battalion, and the Engineer hospital is for the sick of the Royal Engineer corps.

2012. What are the numbers in each of those ?—The number varies every day. Just now the numbers are, in the general hospital 123, in the garrison hospital 230, and in the Engineer hospital 76.

2013. (*Sir H. K. Storks.*) You do not know the number for which the hospitals are calculated ?—Not exactly ; I could give within 20 of the number.

2014. (*President.*) Will you be so good as to fill in the numbers ?—Yes. (They are for the general hospital 386, garrison hospital 358, and the Engineer hospital 126.)

2015. Are the wards sufficient for the number of patients they contain ?—At present they are.

2016. That is, that the patients being fewer in number, a good many beds are unoccupied ?—Yes.

2017. That gives a larger number of cubical contents to each patient ?—Yes, at the present moment, because we scatter the patients when there are few.

2018. When the hospital is full or in its average condition, are the wards large enough ?—Certainly not. The allowanee of spacc is very small.

2019. What is the allowance calculated for each bed ?—I have a specification of the allowance in each hospital. There are two buildings in the general hospital, the upper hospital and the casemates. In the upper hospital there is the ground floor and the upper floor, and the size of the ward is different on the two floors. In the lower ward the length of each room is 59 feet, the height 13 feet 10 inches, the breadth 22 feet 10 inches. The width of each bed is 31 inches ; the length of the bed is 6 feet ; the distance between the beds laterally 22 inches ; the distance between the feet of the beds 9 feet ; the number of beds in each ward 27 ; cubic feet for each patient 690. In the upper room the wards are not so high, the cubic space is 640 when the ward is full.

2020. What is the height of the upper ward ?—The height of the upper ward is 12 feet 10 inches, and 13 feet 10 inches in the lower one ; there is a foot difference.

2021. That space between the beds is less than is laid down in the hospital regulations, is it not ?—No ; at least I am not aware.

2022. Who decides upon the number of patients who are to be placed in each ward ?—I regulate that. In a great measure the thing regulates itself ; it is laid down for so many patients, and you receive so many.

2023. By whom is it laid down, by the barrack department ?—By the barrack department I imagine.

2024. There is painted on the door of each ward in the hospital the number it will contain ?—Yes.

2025. And you would think yourself bound to put in as many patients as that ?—You are obliged to put in as many as that ; they would not find you any extra accommodation.

2026. (*Mr. Alexander.*) They would not provide fuel ?—No.

2027. (*Sir H. K. Storks.*) It is in the same way as the barrack department would provide for men in health ?—Yes, everything would be regulated according to a scale, so many for that ward.

2028. (*President.*) You scatter the patients, do not you ?—I do when the wards are not full.

2029. You have three wards which would hold how many ?—Twenty-four patients and three orderlies.

2030. If you had patients enough to fill two of the wards according to that scale, but you had the third empty, then you would put the patients into the three wards and a smaller number in each ward ?—Yes.

2031. You would have no difficulty as to fuel and light, would you ?—No ; my requisition would be sufficient.

2032. Are they well ventilated ?—I conceive not.

2033. There is a good deal of foul smell in them, is there not ?—The wards are very foul in the morning, when the patients get up,—remarkably foul.

2034. Speaking of the hospital below, the Brompton hospital, are the privies in good order ?—At the garrison hospital they are not, the water-closets are out of order just now.

2035. Is there not a good deal of foul smell all through the corridors ?—Not generally speaking. There is when the closets are out of order.

2036. Is it not the practice, in that hospital, to keep the water-closets closed in the day, as if they were much used they would get out of order, and be foul ?—If they are kept closed during the day, that depends on the medical officer ; I think he keeps them closed during the day, so that they may not be used by every man indiscriminately.

2037. That they should not be used by anybody during the day ?—Patients perhaps, who required the use of a water-closet, would be placed near one, that would be left at their service.

2038. What is the reason for that ?—If you left all the water-closets open during the day, they would all get out of order, for no men, however well, would trouble themselves to go to the privies.

2039. Have you seen the water-closets in the naval hospitals ?—They are very superior.

2040. They are not kept closed, are they ?—They do not appear to be so.

2041. The reason that they are kept closed at Brompton is, is it not, that they are not effective for their purpose, and the fear is, that if they were constantly used they would become offensive ?—I think it is on account very much of the carelessness of the soldiers ; it is well known that they stuff all sorts of things down them and put them out of order.

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2042. Are soldiers more careless than sailors?—I do not know about that; I take the soldiers as I find them; if a water-closet can be got out of order, the soldier contrives to do it.

2043. Have you got an ample supply of such things as crockery, glass, and so on, in your hospital?—Not at present; we are to have a complete establishment of everything.

2044. You are dependent for those things upon the barrack department, are you not?—Yes, the purveyor receives at present from the barrack department the sort of stores which he uses in the hospital.

2045. But do they give to each man a plate?—He has a plate and a basin.

2046. And a tin cup?—Yes, a tin mug.

2047. Do they use the tin cup?—They do not like it; they prefer having their beer out of a basin.

2048. Why do they object to the tin cup?—I do not know, except that they will not use it.

2049. Does it corrode?—It gets very nasty-looking very soon.

2050. (*Mr. Stafford.*) Is it to be continued?—No; there is a thorough alteration taking place in the system of furnishing the hospitals now: the general hospital is to furnish everything; we are to be independent of the soldiers' kits, for their knives, forks, and spoons.

2051. (*President.*) The soldier's kit, though it furnishes those things, does not furnish the cup, does it?—No; we give them plates and a basin or bowl. I think the basin answers very well for the tea; perhaps a mug would be better.

2052. Do not they drink first in the morning tea or coffee; then at dinner they drink their soup; then, after dinner, they drink their beer out of it?—Yes; after the dinner the beer is given to them in a basin.

2053. And they drink their medicine out of it, do they not?—No; the medicine is served up in gallipots: if a draught is sent for, it is sent in a gallipot, a little crockery cup, a very good thing for the purpose.

2054. (*Sir James Clark.*) It is difficult to carry, rather, without spilling, is it not?—You might have a more convenient utensil.

2055. (*President.*) In a naval hospital, what do they take their medicine in?—I think in tumblers.

2056. A glass?—Yes.

2057. Do they have a cup and saucer?—No.

2058. But they have a mug?—Yes.

2059. And they have a complete set of crockery there, belonging to themselves?—They are perfectly independent of any other persons for their supplies.

2060. Is it not impossible almost to drink any hot liquid out of tin?—Yes.

2061. (*Sir James Clark.*) You stated that draughts were sent up in a gallipot, how do you give a mixture?—That is furnished in a bottle.

2062. (*Sir H. K. Storks.*) How does the patient drink it?—It is poured into a gallipot.

2063. (*Sir James Clark.*) Have you no small bottles for draughts?—Yes, we have, but they would be poured out of it. Suppose I am at the bedside of a man and say, fetch the man such and such a draught, the orderly would take the prescription with the gallipot, and bring up the draught.

2064. (*President.*) As regards ablutions, how do the men wash in Fort Pitt?—They have an excellent ablution room in Fort Pitt, and there the men go who are able to leave the ward, those who cannot, have a basin and towel brought to them by the orderly.

2065. Have you a sufficient supply of those?—Yes.

2066. Have you at Fort Pitt?—Yes.

2067. In the hospital below, have you?—At Brompton Mr. Maclean seemed to think that he required more basins, but I do not know where he would put them if he had them.

2068. Why not?—He has no place.

2069. Are there no cupboards?—There is a little cupboard about 18 inches square quite unfit for the purpose.

2070. Cannot that be remedied?—I cannot say that. I know that fresh cupboards have been applied for, but I do not see where you could put them.

2071. You would have to go the barrack department to send for an engineer?—I should probably have to represent the subject to Doctor Smith in the first instance.

2072. You get the jack towels from the barrack department, do you not?—Yes.

2073. And the purveyor only buys the square towels?—They are the soldier's own; the little towel is the soldier's.

2074. It comes in with his kit?—Yes.

2075. That is in future to be supplied to him, is it not?—Everything, without exception.

2076. Have you a good kitchen?—It is pretty fair; it answers the purpose very well: it is not sufficient for roasting.

2077. (*Sir H. K. Storks.*) What can you cook in it?—There are two kitchens; the larger one is fitted up with boilers and dressers in which the soup is made, and the potatoes and meat are cooked; the smaller one is for cooking extras, such as mutton chops and puddings.

2078. (*President.*) What is the size of the large kitchen?—I should think about 30 feet square.

2079. And the little one is how large?—I suppose it is not more than 13 feet.

2080. (*Sir H. K. Storks.*) Is there an oven in the smaller kitchen?—Yes; it can bake 16 puddings at a time.

2081. (*President.*) Not more?—No.

2082. In the other, in the large one, you have no means of baking at all?—No.

2083. Therefore you give boiled beef and soup every day?—Yes, but every medical officer can order his patient any other diet he chooses, roasted and fried; he has only to say so, and it is done.

2084. Yes, but you are dependent upon this little closet which you call the extra kitchen, where the accommodation is so small, that they can only bake 16 puddings at a time?—Yes.

2085. (*Sir H. K. Storks.*) You cannot roast in the small kitchen?—Moderately; if you order a man roasted meat, it is understood it is baked or fried; to roast, you must roast a joint.

2086. Then the mutton chops are always fried?—They are done on a gridiron.

2087. Is there a fire-place?—Yes, the men prefer meat fried to anything else, and if they can have their meat fried, they do.

2088. (*President.*) Is there not a great disadvantage in cooking, now that the privies are almost next door to the kitchens, at Chatham?—There is a great disadvantage there.

2089. They are very often offensive, are they not?—They are not immediately next door, but very close to it; they are very offensive.

2090. Have not many applications been made to the engineers' department to correct that evil?—I believe a great many, but certainly without further effect than the temporary cleaning of them.

2091. There is a large cesspool just outside?—Yes.

2092. Have you been at Chatham when it has been cleaned out?—Never when the cesspool was opened.

2093. With regard to the interior of the building, how often do you lime-wash it?—It is lime-washed every spring.

2094. And painted?—No. The painting is done once every eight or nine years.

2095. Is that sufficiently often?—I should think not. I, not long since, requested to have the cupboards and the woodwork of the wards painted, but my requisition on that point was refused on the ground that the regulated period had not elapsed.

2096. It is almost denuded of paint, and the woodwork looks brown and dirty?—Very much so. I first represented to the commandant the state of the hospitals and requested to have them painted. My application was forwarded by the commandant to the

colonel of engineers, and his answer was, that the period had not arrived. When that answer from the colonel of engineers was forwarded to me through the commandant, I addressed Dr. Andrew Smith on the subject, and he wrote me back to say that if I had any difficulty (he quite agreed with me as to the propriety of painting) in having it accomplished, I should then refer to him. With a copy of that letter I again addressed the commandant respecting the painting ; my application was again forwarded to the engineer, who, I suppose, submitted it with an estimate of the expense to the Secretary-of-State for War, because the answer that I got was that the expense would be so and so, and that there were no funds.

2097. Was the expense very large ?—415*l.*, I think.

2098. Is it your impression that the mode of doing those things is far more expensive than if it was done by contract ?—Very much more expensive than if it was done by contract.

2099. Could you make a contract in Chatham, and would they do it for less there ?—I heard a man say so ; I heard him say that he thought that the job might be done for 140*l.*

2100. The job of whitewashing ?—There was an instance the other day in which the engineer's estimate was 7*l.*, and I think it was done for 3*s.*, certainly under 10*s.* I make no doubt that if we could carry on repairs in that way, by contracts made by ourselves with parties in the town, everything would be done cheaper.

2101. You consider that painting is necessary for the health of the hospital as well as its appearance ?—Yes.

2102. Now it has a very dirty appearance, has it not ?—A very dirty and uncomfortable appearance.

2103. (*Sir James Clark.*) Do not you think that a dirty hospital has a bad moral effect on the patients ?—Very much so, they look neglected.

2104. (*Mr. Martin.*) And that may lead them to neglect themselves ?—I dare say it does.

2105. (*Mr. Stafford.*) Have you baths ?—Every kind of baths.

2106. Are they sufficient ?—Yes.

2107. Have you laundries ?—We have a laundry, with every thing that is necessary in it.

2108. (*Sir H. K. Storks.*) Do the orderlies sleep in the wards ?—Yes, the orderly on duty sleeps in the ward ; we have a spare room for the others.

2109. You stated, did you not, that the wards were calculated for 24 men, and three orderlies ?—Yes.

2110. Do they sleep in the ward ?—Not now, I have been able to arrange differently, not being pressed for room ; the orderlies not on duty sleep out of the room.

2111. (*Mr. Alexander.*) Are the water-closets adjoining your wards, at Fort Pitt, in a good state?—They are badly contrived, and not in good order.

2112. (*President.*) Are those hospitals of very modern construction ?—None of them ; they are old.

2113. The one at Brompton is more modern, is it not, than the one at Fort Pitt ?—They are all the same : the buildings, I think, were never intended for the purpose.

2114. The upper one at Brompton is modern, is it not ?—I do not believe it was a hospital, originally ; the little building at the back was, but that is a very small portion of the hospital.

2115. Is it not necessary for hospitals to have stone stairs for safety ?—Most assuredly, and I have already represented that subject.

2116. Have you stone stairs to that hospital ?—Yes ; but they are ineffective, because it is a wooden landing ; in the main building, where I suppose 200 men are accommodated, it is all wood.

2117. (*Dr. Andrew Smith.*) Have you frequently, during the time that you have been principal medical officer at Chatham, asked for repairs to be done which were not accomplished ?—I think that almost all the large repairs have been refused, and all the small ones accomplished.

2118. (*President.*) Very frequently now the engineer when he is called in employs contract labour in Chatham ?—Always as far as I know. They had some time since to introduce a warming apparatus into the lunatic hospital, and that was done by contract ; it was not done by the engineers themselves.

2119. (*Dr. Andrew Smith.*) On what ground were the alterations refused, on the ground of expense, or their not being considered necessary ?—Generally on the ground of expense, I think.

2120. (*President.*) Supposing the thing is done by the engineers, though it is done more expensively, is it done as quickly ?—No, it is not.

2121. There are some of those water-closets which are closed at the Brompton hospital marked for repair ; when is it expected that they will be fit to use ?—From the time of their being out of repair to the time of their being put in repair would probably be a fortnight or three weeks. If it had been in the hands of the purveyor, he would have sent for men in the morning and have had them done before the evening.

2122. (*Mr. Alexander.*) Can no slight leakage be repaired without going to the barrack department ?—No, nothing can be done.

2123. (*Mr. Stafford.*) Have the men shelves over their beds ?—They have a bedside table.

2124. Are there no shelves ?—No.

2125. Does that bed-table contain the medicines ?—There are shelves over the mantel-piece where the medicine is put.

2126. Where are the tins kept ?—In a cupboard in the ward.

2127. Not over each bed ?—No.

2128. Is that a better plan ?—Yes, I think that the patient's bed should be as clear as possible ; they are incumbrances : it is the business of the orderly to bring everything that the man requires.

2129. (*President.*) Of what material are the chamber utensils made ?—Pewter.

2130. Is that as good as crockery ?—I think not, it creates more smell and impurity.

2131. Are the men's effects, including blacking brushes, placed under the beds ?—The packs are in the pack store ; the blacking brushes in the wards with the men.

2132. Ought there not to be some place where those things should be stowed ?—Yes, but I think that the system which is about to be introduced will do away with the blacking brushes.

2133. The meat that is ordered for the usual dinner is procured the day before ?—The order is sent in the day before.

2134. The extras are always procured the day they are ordered, are they not ?—Yes, and there is considerable delay in consequence.

2135. The materials for beef-tea are got the day they are ordered ?—Yes.

2136. If you wanted to give beef-tea in the morning to a man who was sinking for want of nourishment, could you give it to him ?—Not according to the regulations, because the extras are obtained after the diets of the day are made up, and it would be half past 10 or 11, or later, if the hospital is very full, and those things have to be sent for from the town at a very considerable distance.

2137. (*Sir H. K. Storks*) Have you not preserved soups or meats in the purveyor's stores ?—I dare say he has them, but we should not think of using preserved things.

2138. Why not, if you wanted them ?—We do not want them, we want fresh.

2139. (*President.*) In the naval hospital they keep from the supper and the dinner of the day before a reserve for making beef-tea the following morning, do they not ?—Yes.

2140. Might not that be done in the army hospital?—I think it might ; it often happens, now I think of it, that there may be a little meat over, which they would not send back if the weather would permit it ; but I spoke of chicken broth or a little fish that you might want.

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2141. As to chicken or meat, there ought to be, ought there not, a reserve to meet cases of that kind? I think so, I think it might be arranged; we are particularly inconveniently situated for anything of the kind. At Melville hospital they have only to send a few doors for anything that they want.

2142. Then they keep a reserve?—They keep a reserve of meat, not of fowl.

2143. But it would be no expense whatever?—Not the meat. I do not see why there should be any loss on fowl—very trifling.

2144. (*Mr. Alexander.*) Would not it be very advantageous if estimates were made out at the end of each year for the probable expenses of hospitals separately from those of the barracks?—That is the regulation now. I the other day sent in, not an estimate, but a statement of the various repairs and improvements that would be required in the several hospitals.

2145. (*President.*) To whom?—To the commandant—that is the new system.

2146. To whom does the commandant send it?—Direct to the quartermaster-general.

2147. Does it not get clubbed with the estimate for the barracks?—I do not know.

2148. You do not know whether, when the estimates are submitted to Parliament, the hospital estimates are voted separate from the barrack estimates?—No.

2149. Do you consider Melville hospital to be better calculated for those purposes, and the buildings more ample than the army hospital?—The building is very superior; it was built for a hospital, and is very much more adapted for the purpose; it is very well proportioned to the requirements of the men; and the number of patients is never excessive.

2150. And the amount of cubic feet given per man is very much larger, is it not?—Very much larger I should fancy from what I have seen.

2151. There are 3 feet between each bed?—Fully.

2152. And 12 feet between the beds at the foot?—Yes, and the wards are much nicer.

2153. And the beds are wider, are they not?—I think they are.

2154. Have they the same difficulties as to painting and cleaning them?—I fancy not; whatever the principal medical officer requires is immediately done by his own order, unless it is something of very great expense, he then has to get the sanction of the director-general of his department.

2155. Have they separate lavatories to each ward?—Yes, a small one.

2156. Is their kitchen superior to the other?—Everything is superior throughout.

2157. In supplies, accommodation, quality, and quantity, is it superior?—I should say not as to the diet. I think ours is as good as theirs.

2158. Except that they give alternate roast and boiled meat?—I think they are going to do it, they are having the fire-place altered for roasting.

2159. (*Sir James Clark.*) Are the same quantities given in both?—I think so, as nearly as possible.

2160. (*Sir H. K. Storks.*) Is the hospital at Fort Pitt well ventilated?—No, I think not, no ward can be well ventilated when it is so full.

2161. Are the casemates well ventilated?—No.

2162. (*Mr. Alexander.*) Are you aware that every November an estimate for the ensuing year is sent in by Mr. Drummond, and that he has the power of carrying it out?—Yes, I heard him say so.

2163. (*President.*) You saw the water-closets there were very good and sweet?—They were perfectly sweet, and they had mahogany seats.

2164. (*Mr. Alexander.*) There can be no comparison drawn between the hospital of the Marines, and the military hospital at Chatham?—None whatever.

2165. (*President.*) Did you see their dispensary?—Yes.

2166. It is beneficial to have a sort of dispensary where things can be had at night?—I think that the system is very good.

2167. (*Mr. Alexander.*) Is not the bed linen much better washed in the marine hospital than in the military hospital?—Yes, they do it themselves.

2168. By hired labour?—Yes.

2169. (*President.*) You do it, do you not, by sending it to the barrack department?—Yes, we only wash the personal linen in Fort Pitt.

2170. (*Mr. Alexander.*) Would it not be better if all the washing of the hospital was done in the laundry of that hospital under the purveyor?—No doubt it would be much better and cheaper.

2171. (*President.*) You have stated that you have fewer goods supplied, that you have not the same means of cleanliness, you have not supplied the same quantity, nor the same quality, as in the naval hospital?—I think that the diet is as good.

2172. But with regard to dry stores, furniture, crockery and glass, their supply is better and more ample than yours?—I think so; as to their being more ample, we could have as many as we required. The articles looked to me of a better description.

2173. With reference to cleaning and painting they have facilities which you have not got, as you are dependent upon another department, and they are not?—Yes.

2174. With regard to repairs, it is the same, is it not?—Yes.

2175. Do not you think that the general stinted and meagre appearance of the Chatham hospital, when a young medical officer comes down to it on joining the army, coming flush from the great establishments in London, must lead him to form a low estimate of the value attached to the health and comfort of the soldier?—I think that he would think the hospital very inferior to a civil hospital; I do not know that he would be impressed with the idea that the soldier was little cared for.

2176. Would it not lead to the impression that the authorities did not attach that importance to the medical treatment of the soldier that he requires?—I do not think that that would be exactly his impression, but that the government were not inclined to lay out money on it.

2177. That is what I mean?—I think that those who represent the country are very anxious that the soldier should have everything done for him that he could require.

2178. There is not the accommodation in the way of building that they ought to have?—No, nor does the furniture present the same comfortable appearance that the furniture in a civil hospital does.

2179. Neither does the contracted space give the same chance of health and recovery as the larger space, in a civil hospital?—I do not think that it does.

2180. As to the supply, would you put all that into the hands of your purveyor, as your remedy?—Yes, I should make him find everything, and perform all the repairs. I would make the hospital complete in itself, and between the medical officer and the purveyor everything should be done.

2181. You would expect the purveyor as to diet to obey implicitly the orders of the principal medical officer?—Yes.

2182. With regard to furniture, you would expect him to produce for each patient everything necessary for him, without going through the ceremony of making a requisition for every article?—I should explain that he does now do it; he has a store which he obtains from the barrack-master on requisition.

2183. Do not you make a requisition on him for the things that are wanted?—No; there is a supply in each ward, each bed is furnished, and the orderly in charge of the ward, and the ward-master, are responsible.

2184. In war, would it be for the principal medical officer to make requisitions for all the things?—Yes.

2185. Would it not be better, that the principal medical officer should, merely have to say, I have so many patients expected, and you must provide for them?—I think that in war the principal medical

officer should be independent, and be able to order such and such things to be produced.

2186. Ought there not to be certain things to be produced, as a matter of course, without any command? —Certainly, if a hospital is to be established for so many patients, it follows that a certain number of things would be necessary in proportion to each patient. If I tell the purveyor to provide a ward for so many patients, I suppose that he understands that he must have so many blankets, sheets, and utensils of all kinds.

2187. Why do you think that he would do it better than the barrack department?—Because it would be his chief business; he would be responsible that it was done. If I go to the barrack officer it is probably a secondary business with him, and therefore he is not so fully responsible or interested in it.

2188. Would you allow him to make contracts?—Yes.

2189. You would make him the purchaser of the supplies as well as the issuer?—Yes.

2190. And the storekeeper?—Yes.

2191. Whom would you put them under in the ward?—Under the ward-master.

2192. He is the proper person, you think, to be responsible?—Yes.

2193. Is he responsible for the cleanliness of the ward now?—Yes.

2194. But he is responsible under the purveyor, is he not?—Yes.

2195. Is it supposed to be the purveyor's duty?—Yes it is; with me it is merely nominally so. Mr. Pratt is not exactly the purveyor of the hospital; he has a large district to attend to, and his business at Fort Pitt is secondary with him; it should be his first business.

2196. Do you think, instead of its being done by the purveyor, it could be done by the commissariat?—I think the purveying might be a branch of the commissariat.

2197. You would not make the commissariat indiscriminately supply the army in the front during war and the hospital besides?—Certainly not.

2198. Why?—Because then it would become a secondary duty, diminishing the efficiency of the service; if the same man has to supply my hospital with bread and meat who has to supply the effectives of the division, the two duties will sometimes clash; there might be deficient means of carriage or deficient meat or bread, and then the hospitals are neglected.

2199. At present the purveyor can, can he not, at Chatham, supply the hospitals with bread and meat?—Yes.

2200. He has always the power, has he not, of supplying the hospital, even where the commissariat would usually do it if he thinks that he can get a better quality by giving an additional price?—I think so.

2201. You say if the commissariat did it, you think they would consider the supply of the hospitals as a secondary duty?—Yes, I have always found that that is practically the case, that when you go to war you meet with difficulties, and then the main duty is to keep the effectives well supplied in front, and the hospitals are supplied *if possible.*

2202. You have served in India, and besides that in the Burmese war?—Yes, and in America.

2203. Have you ever been in the field in India?—Twice, in the Sutlej campaign, and in Burmah.

2204. In the Sutlej campaign did you find that which you mention now, that the hospitals were less well served than the troops?—The duties were found to clash, and the hospitals were consequently neglected, and Lord Hardinge, seeing that, appointed an officer specially to the hospitals at Ferozepore.

2205. As a separate duty?—Yes; as a separate duty to supply the hospitals, and not only that, but every day he had to visit every hospital and see the medical officer, and to inquire whether he had everything he wanted, and then it answered well, because it was that officer's first duty, but where it is his second duty he neglects it.

2206. The commissariat in India is much better than ours, is it not?—I should say decidedly not. I never found it so. *J. R. Taylor, Esq., C.B.*

2207. It is composed of military officers, is it not?—Yes, of men taken from the regiments as young men. 22 May 1857.

2208. (*Mr. Martin.*) Are you aware, that recently, by an order of Lord Dalhousie, a year's probationary course beginning and ending with examinations is required from all?—I was aware that he was making great improvements in the commissariat department, because it had been found deficient.

2209. A probationer is first received after having passed his examination in languages; he is then placed for six month's in the office of the commissariat at the presidency; then six months more in the office of the auditor-general of commissariat accounts, ending with an examination before a board of officers, extending over three days; were you aware of that?—It was not so while I was in India; I left in 1854.

2210. (*President.*) Is there not this defect in that commissariat system, that an officer who is taken from a regiment goes back to it on promotion?—He did, when he got his regimental majority.

2211. Then you lost to the commissariat service all the experience that he had gained in the commissariat business, and he came back to the regiment having lost his regimental knowledge?—That was the objection.

2212. Has that been remedied?—They make them permanent now, I believe. I never found that the commissariat in India supplied the hospitals more efficiently than our commissariat, quite the reverse; I had incessant complaints; I mean, that things were never sent up until they could conveniently do it. "If possible" was always the answer to the hospital; but they knew very well that they must have the soldiers' rations and rum up, and it was "must;" they were obliged to do so; therefore I wrote to Dr. Smith, pointing out that it should be somebody's first duty to supply the hospitals.

2213. (*Mr. Martin.*) What was your opinion as to the value of the subordinate medical department in the Indian army?—It was very valuable indeed, they could not get on without them, I think it was a most excellent establishment.

2214. Should you think that the introduction of such a department into Her Majesty's army at home and abroad would be a great improvement?—I do not think that there is sufficient sickness or sufficient strength in our colonies to require that assistance.

2215. Not in the West Indies?—I am not certain.

2216. You are aware that the subordinate medical department in India consists of two warrant officers, the one an apothecary, and the other representing the commissariat of the hospital, viz., the steward or the assistant?—He represents the purveyor or rather the steward, certainly not the commissariat, because he can supply nothing.

2217. He renders his account to the commissariat officer of the division?—Yes, but he is a mere steward, he has no power to get anything.

2218. But he dispenses what is given to him, the other represents the medical stores, compounding and administering the medicine in the hospital, he is the apothecary or assistant apothecary; do you consider him also very valuable?—Very much so.

2219. Both of them keep their own accounts so as to save the surgeon?—Yes; I do not think that a regiment anywhere else, I cannot speak for the West Indies, but nowhere else would a regiment require an apothecary or a steward.

2220. (*Mr. Alexander.*) Is not a dispenser necessary for a regiment?—No.

2221. Who should dispense?—I think that the responsibility rests with the medical officer. I should not object to his employing an intelligent non-commissioned officer to make up medicines under him.

2222. Would it not be better if there were regularly established rules to that effect?—Yes.

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2223. Have you not men in training now at Chatham ?—Yes, there is the medical staff corps in training.

2224. Do not you think that the present hospital serjeants could act as dispensers, and be held responsible for that duty ?—I think that the responsibility should rest with the medical officer, but that there should be no regulation preventing him from employing those men under him.

2225. (*Mr. Martin.*) On actual service, even in Europe, would not such a department as the subordinate medical one in India be extremely valuable ?—In such an emergency as that which occurred in the Crimea, it would.

2226. Would they not be as efficient in war as in peace in the regimental hospitals ?—Yes.

2227. (*Mr. Stafford.*) How many medical officers have you under you at Chatham ?—The number varies every day; I think I have fewer than ever now, somewhere about eighteen for all the hospitals.

2228. What ranks are they ?—They are staff surgeons of the first class. I have two of that class and six staff surgeons of the second class; there are five staff assistant surgeons, and two acting assistant surgeons.

2229. What are the acting assistant surgeons ?—Assistants without a permanent appointment. Probationers.

2230. (*President.*) How long do those probationers stay generally, now ?—It is almost impossible to average the time, it is so uncertain.

2231. What is the longest of the attendances ?—Some that went to China had been there nearly a year and a half, sometimes they are there a very short time.

2232. (*Mr. Martin.*) The longer they remain, you think, the better for the public service ?—I should send a man at once to a regiment myself, but that is a matter of opinion. I look upon a regiment as an excellent school.

2233. (*Mr. Stafford.*) What amount of supervision have you over those young men ?—There is a staff surgeon of the first class in charge of each division, and he has to superintend the officers junior to him in each division.

2234. Has he any control over them except during the time that they are in the hospital ?—No.

2235. Do they all lodge in the town ?—No, some of them lodge in the fort and some in the town.

2236. How frequently do you report to the chief medical officer ?—I send a confidential report to Dr. Andrew Smith every month concerning the junior officers.

2237. How often concerning the senior officers ?—Once a year.

2238. (*President.*) Do you give them any special instruction except what they could get from their own observations ?—Yes; they perform operations under the curator of the museum and the staff surgeon of the division whenever there is a post mortem examination.

2239. Do they get any clinical instruction ?—There are no clinical lectures given; there is an operation room which is very well adapted for the purpose.

2240. (*Mr. Martin.*) Have they any instruction in sanitary science ?—No.

2241. (*Dr. Andrew Smith.*) From what sources do you acquire knowledge to enable you to report fairly to me in regard to the qualifications of candidates and their efficiency for the duties of army medical officers ?—I obtain my information from my own observation; from reports which are required of the staff surgeon of the first class in charge of the division, and also from the ward report, sent to me by each junior officer; I gather from that some knowledge of him.

2242. You also examine their registers ?—Yes.

2243. What instruction do the candidates at Chatham receive while stationed there; first, as to post mortem examinations ?—They are required to attend every post mortem examination, and if the body examined is that of a patient who died in their ward, they are called upon to make up an abstract of the case which is read out before the post mortem examination is made, and that abstract includes their diagnosis of the disease; the post mortem examination is then made.

2244. (*Sir James Clark.*) What class of officers do you allude to now ?—The junior officers, the assistant-surgeons.

2245. The man who treated the patient ?—Yes, under the superintendence of the staff surgeon; the staff surgeon is the responsible man.

2246. But he allows the probationer to keep the patient under his direction ?—Yes. The probationer writes in the register and prescribes in ordinary cases so far as the staff surgeon of the division chooses to trust him.

2247. Do you think that a very useful kind of instruction for a probationer ?—Very much so.

2248. How long do you think he should have the advantage of such instruction before he goes into the army ?—I myself should be inclined to send a man to a regiment at once, as in a shorter time he learns the art of dealing with soldiers and their habits better than at Chatham.

2249. (*Mr. Alexander.*) Has he not at Chatham an opportunity of practising operative surgery, and studying the stethoscope ?—Yes; but those are the points that I do not suppose they need instruction upon so much; they are just fresh from school.

2250. (*Mr. Martin.*) You are aware that in India every assistant surgeon is required to serve three months as a probationer at the general European hospital at each presidency ?—I think that is the nominal rule, but I do not think it is carried out. When I was in the country, I think they came straight up the country with recruits.

2251. Referring to a former reply of yours, do you think, generally speaking, that the soldier feels satisfied that ample hospital provision is made for him by the government ?—I think he is quite satisfied, but I do not think that he is a judge.

2252. (*Dr. Andrew Smith.*) What instructions are given in reference to operative surgery on the dead body ? Will you mention, in succession, the different processes that take place ?—A notice is given always of every post mortem examination that is about to be made, and every medical officer is required to attend, particularly the junior officers; the officer who has had charge of the patient writes out an abstract of the case and his diagnosis, and the post mortem examination is then made. The officer making the post mortem examination, who is the officer who has had the main charge of the case, describes the morbid appearances as he goes on, regularly going through the different regions, and another officer writes it down; it is afterwards entered in the necrological register; after the post mortem examination is finished, under the superintendence of the curator or the staff surgeon in charge of the division, the operations are either shewn to the junior officers, or they perform them under the guidance of the staff surgeon of the division or the curator. I do not recollect anything else.

2253. Is there any teaching with reference to the application of bandages, splints, and such like things ?—Yes, every officer is required to be *au fait* at that.

2254. Is there not a stuffed figure there for that purpose, for the use of those who cannot have an opportunity of applying them on patients ?—Yes, there is.

2255. In order that they should be accustomed to the application of bandages and splints ?—Yes.

2256. What is the ordinary routine duty of a junior officer while he is an orderly officer ?—An orderly officer has so many duties that I can hardly remember them at once; but he is responsible for the whole management of the hospital during the time that he is on duty, and, supposing the other officers absent; he has to visit the wards frequently during the day; he has to visit them always at every meal, and see that the meals are properly served and conducted; he has

to attend to every complaint that a soldier may make as to his meals, he has to see that the orderlies are properly attending upon the patients, and that they are present at certain hours ; he has to see any patient who may be taken ill, and to answer all emergencies ; he has to see patients brought in at all times ; he has also to enter the admission of those patients in a book ; he has also to witness anything given over by those patients in charge to the ward-master, and he has innumerable duties of that kind to perform.

2257. Are any steps taken to instruct candidates arriving in those duties before you send them to do the duties ?—He is put on as a supernumerary if he is a new hand.

2258. For what purpose ?—To learn the duties before he is allowed to be an orderly officer.

2259. (*Mr. Alexander.*) Would it not be beneficial if so many months' leave were given to each officer for every year he had served abroad, making it imperative upon him to attend a course of lectures at some school during that period ?—I think it would be a great advantage that he should have an opportunity of renewing his acquaintance with science. I think it necessary.

2260. Would not many officers take advantage of it to improve themselves in a knowledge of their profession ?—I think they would.

2261. If a roster were established, and carried out with that object, officers would have more chance than now for improving themselves ?—Yes, they would.

2262. If certain periods of service were laid down for certain stations abroad, after which they might return on being relieved ?—I think that they ought to be relieved, after a certain interval, and brought home and placed in situations in which they might improve themselves.

2263. Suppose an officer abroad for four years ; if he came home and he was entitled to two months' leave for every year that he had been abroad, that would give him eight months' leave of absence, during which he could go to some school for a certain period, would you make him attend some school ?—Yes, I think that the principle is admirable.

2264. Supposing that at Netley hospital three first-rate men were appointed to lecture, having charge of the medical and surgical wards, one appointed to give a clinical course, another to lecture on surgical cases, and another upon pathology ; also to lecture on morbid anatomy, the practice of operative surgery, and on military hygiene, would not much advantage be derived from that to the profession and to the officers receiving that instruction ?—I think so.

2265. Those three officers should be permanent, do not you think, in order that they might get into the habit of teaching ?—I am not sure that I would recommend them to be permanent. I think that officers abroad acquire information that it would be very desirable they should give to others when they come home.

2266. (*Dr. Andrew Smith.*) If they were permanent, would it not happen that a man when he got near to the head of his grade would want to get away to get promotion ?—If he could not retain his appointment with promotion.

2267. (*Mr. Martin.*) Do not you think that medical officers who come home on sick leave should have similar advantages to those which Mr. Alexander has stated on the recovery of their health, and that a certain time should be allowed to them to study in the civil hospitals ?—I think that if they come home on account of sick leave they should have their sick leave.

2268. And after that they should have the facilities afforded to them ?—I think that that should be a separate consideration on other grounds.

2269. (*Sir H. K. Storks.*) Is it desirable that an assistant-surgeon should be required to pass a second examination before he is promoted ?—That used to be the rule, I believe, but it was dropped, I fancy, because it was not found practicable.

2270. (*Mr. Alexander.*) There are some difficulties in carrying it out, are there not ?—I think so ; I think it would be very objectionable, it would make the department unpopular, especially where a man has taken his diploma, or one or two from different colleges.

2271. (*President.*) They do that in the navy, do they not ?—I think that the navy is not much liked as a service.

2272. Are there not other reasons for not liking it ?—Yes.

2273. Among the medical officers, is it not the rule of the navy ?—I recollect some years ago when I was in the schools having some assistant-surgeons of the navy brought to me by Mr. Guthrie to work up for the college examination for their promotion, and their feelings on the point were very unpleasant.

2274. Did you ever know anybody who, on going up for an examination, did not think it would be a good thing to dispense with it ?—Not if a man acquires honour by it.

2275. The great inconvenience in the army service would be, would it not, that officers are so often abroad that it would be difficult to afford them the opportunities for preparing for such examination ?—There would be difficulties, and I do not see how you could establish an examination.

2276. If there was leave of absence by roster, would not that facilitate it ?—Yes, it would bring them before a body to be examined, less unpleasant to their feelings ; formerly an old assistant-surgeon might be brought up for examination, and one or two of the examiners be junior to himself.

2277. (*Sir H K. Storks.*) Suppose these officers were promoted abroad, subject to passing an examination on their return home, would not that obviate the difficulty ?—I should doubt the utility of the examination.

2278. (*President.*) Would it not be useful even, supposing it not necessary in order to establish his fitness for the rank of surgeon, and would it not in a young man correct the tendency to that idleness which the liberty of his position engenders, when he first joins his regiment ?—It would with some, but not generally.

2279. Do not you think, with the mass of mankind, the prospect of examination is the corrective of idleness ?—I do not think it is.

2280. (*Sir H. K. Storks*). Would it not induce a young assistant-surgeon to work ?—I do not think it would. You will find, when pupils are preparing for their examination, if they are inclined to be idle they will be idle, until about six months before.

2281. (*President*). Is it not found at the universities that the only way of insuring discipline and attention to study, is by having frequent examinations ?—I think with a young man of that description it would answer very well, but with assistant-surgeons, who in peace times would be oldish men, it would be very unpopular.

2282. They need not pass their examination when they are old men ?—I think that in an interview with the director general, he could tell at once what they were made of without examining them ; the director general has received reports of them, and he knows what the men are.

2283. That is, as regards their fitness for the rank of surgeon; but as to their tendency to idleness, how would it be ?—I think that the one includes the other. I should say that the director general, from the reports which he receives, could always nearly tell whether a man was an idle man or a working man.

2284. But as they are promoted by seniority, what object is there in it ?—They are not promoted by seniority ; at least, I know of no rule ; it may be seniority in the service, or seniority in the grade, or seniority in the station, or neither one nor the other.

2285. Are they not selected, one man over the head of another, for superior attainments ?—I do not

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know; but indeed, I should say that they were; I have no means of judging of that.

2286. (*Dr. Andrew Smith.*) Could it be laid down safely, as a rule, that you should select for promotion instead of taking by seniority?—I do not think that the plan of selection would satisfy men; they would never be satisfied, for they could not always know why one man was selected over another.

2287. (*President.*) You think that they are not promoted by seniority now?—There is no strict rule.

2288. Are they satisfied with it?—I think that they could not complain of the seniority principle.

2289. (*Sir H. K. Storks.*) Are they satisfied with the present system of promotion?—No, not a man.

2290. (*President.*) Why do you think seniority is fair; is it fair to take a diligent and able man no sooner than an idle and a stupid one?—The subject of promotion, I admit, is a very difficult one; it is fair to the individual.

2291. You think it would not be fair to the service?—I do not think it is; but you may correct that as they do in India, and select a man. If an army is going into the field the governor-general will select a man, and he may or may not take the senior for the charge of the army; but then, although they cannot in the Indian army deviate from the rule of seniority, yet the governor-general can always reward a man by collateral advantages; he can give him a civil station.

2292. (*Mr. Martin.*) Are you aware that in civil life young surgeons do keep up a course of study with a view to pass as fellows of the college of surgeons, and that they do that up to the age of 36 or 40?—I do not know whether they keep up a course of study.

2293. They must necessarily do that in order to pass an examination?—I think that a man who is constantly in London has no difficulty in keeping up his information for such an examination as that. I look upon it that examination before promotion has been found to fail and has been given up.

2294. (*President.*) Do not you think that public feeling has altered very much; it is done in the college of surgeons for example?—That is not quite an analogous case. A man goes through that examination for additional professional honours; here, he acquires no additional professional honours.

2295. Yes, he acquires the rank of surgeon?—He gets the military rank; and that military rank at present is nothing at all, it is no acquisition.

2296. (*Sir H. K. Storks.*) It is an acquisition in point of pay, is it not?—I have been promoted without any increase of pay.

2297. (*Sir James Clark.*) Have the probationers at Chatham any means of practising dissection of a body?—Yes, they may dissect and operate there perhaps more than at any other school.

2298. (*President.*) Is that from the number of invalids?—Yes, cases from all parts of the world.

2299. You do not think that in a general hospital the fact of its being confined to invaliding cases would make that less applicable?—No.

2300. Have you women and children there?—Very few in hospital; there are a good number in the garrison.

2301. (*Sir H. K. Storks.*) You do not admit them into the hospital, do you?—No.

2302. (*Mr. Stafford.*) Are they in the casemates?—Yes, there is a ward there for the reception of women and children.

2303. (*President.*) It is a very foul place, is it not?—Very wretched.

2304. They are not like the casemates just below Fort Pitt, which are lighted at both ends?—There is a window at both ends.

2305. At St. Mary's, is there?—No, there are two windows there.

2306. One on each side of the door?—It is at the door end; at the other end there is a fire-place, and a little window at each side.

2307. How are they admitted there?—This is a charity; it is a mixture, partly charitable and partly government. Government pay for the dieting of the infectious cases, because it is agreed that those cases should not remain in the barracks. Women and children of soldiers married with leave and staying in the barracks who get an attack of the measles or small pox are admitted into this ward.

2308. If a woman contracts any infectious disease, she gets dieted and treated by the government?—She does.

2309. But if it was not an infectious case, she would not?—No; but then if it is a proper case the charity would pay the expense.

2310. (*Mr. Stafford.*) What charity do you refer to?—It is a subscription among the officers and soldiers.

2311. (*President.*) A woman that has not an infectious disease would be treated in the barrack room?—Yes, they come to the hospital for medicine.

2312. Is not that a very unfit thing?—Yes, no doubt many cases remain in the barracks in that way that should not, but they will conceal it as well as they can in order that they may not be turned out.

2313. (*Mr. Stafford.*) Can you give the dimensions of one of those casemates at St. Mary's?—No.

2314. (*President.*) They are very small, are they not?—Very small.

2315. (*Mr. Stafford.*) Could you furnish the Committee with the dimensions?—Yes.

[Description of the rooms at St. Mary's Barracks. Invalid Depôt.

These rooms are casemates of two stories, the upper ones being arched, with a verandah running along the floor of the upper story. The size of the lower rooms are—

Length, 61 feet 6 in.
Breadth, 17 feet.
Height, 10 feet 5 in.
Cubic space, 10,900 feet.

Light is admitted in front by a window on each side of the door, and one above it.

Ventilation, by means of the windows above described, and by three ventilating windows on each side of the walls, running through the whole length of the basement, and at the back by a fire-place with a ventilator near the roof.

Upper Story.

Length, 60 feet 6 in.
Breadth, 17 feet.
Height from floor to base of arch, 3 feet.
Cubic space, 8,400 cubic feet.

Light, in front by a window on each side of the door, and one above it; at the back by two deep-seated small windows, the walls being very thick, and roof is bomb-proof.

Ventilation, by means of the windows (which all open), as above described. A fire-place at the other extremity, as also a ventilator near the roof.

Each of these rooms contains 24 beds, these being 27 inches broad, and 6 feet 3 inches long, the space between each averaging 24 inches; but in the rooms appropriated to the maimed this space is rather smaller, although there are two beds less; this is owing to the space parted off for the married.

H. Huish, M.D.,
Staff Surgeon, 2nd Class.
In Medical charge.
St. Mary's Invalid Depôt,
May 25th, 1857.]

2316. (*Dr. Andrew Smith.*) You are permitted to take into the female hospital a number of women and children not labouring under infectious diseases, are you not?—Yes, but the government do not pay for them, and the charity would object unless it is a case of necessity.

2317. You are also permitted, are you not, to take in women for parturition?—Yes, the charity pays for them.

2318. Have you not received a letter from me with reference to the government granting a large sum of money?—No; I represented the other day the neces-

sity of the government paying the expenses of those women.

2319. (*Sir James Clark.*) Would it not be a great advantage if all medical men entering the army were to pass a certain time at such a hospital as Mr. Alexander described before they became regimental assistant-surgeons?—Yes, it would be an advantage; but I must say that to make a military medical officer there is no place like his regiment.

2320. (*President.*) Would you always appoint a probationer to a regiment rather than to the staff?—I think I would.

2321. (*Mr. Martin.*) In preference to such a probationary course as Mr. Alexander has indicated?—Under those circumstances I think it would be a matter of indifference. I think as he is fresh from the schools he requires no more school knowledge. He wants then to acquire a knowledge of soldiers and of military discipline.

2322. (*Sir H. K. Storks.*) Would he not acquire better knowledge in a general military hospital than in a small regimental hospital?—Yes; his professional knowledge; with the regiment however he would improve his ability as a military medical officer.

2323. Do you think that the sort of life that a young man leads in a regiment, as assistant-surgeon among the young men of the regiment, is a good one?—Regiments differ very much in that respect, it might or might not be so. I think as regards moral conduct, perhaps, a regiment may be fully as good as a hospital. Place a parcel of young medical officers together, and they are just as wild as officers generally.

2324. (*Dr. Andrew Smith.*) Suppose a young man enters into the service and he is appointed to a regiment, and three days afterwards a detachment of 300 men is ordered off, would he be sent away with that detachment, totally unacquainted with the routine duties, and how would he obtain that knowledge?—I would not send him with a detachment until he had been a certain time with the regiment.

2325. (*Mr. Martin.*) Has it not been held by great army surgeons that such a probationary course is necessary before entering on the duties of an army medical officer, and did not Mr. John Bell, on seeing the condition of the wounded at Great Yarmouth, after the battle of Camperdown, come to the same conclusion?—My opinion is, that the best school in which to make a man a military medical officer is a regiment.

2326. (*President.*) Ought he not to have some theoretical instruction upon things that he may never see in his life; for instance, in a very healthy climate, how could he study tropical diseases, and ought he not to have some general instruction upon these diseases?—I imagine him to have had that before he gets his commission. If you reserve that till afterwards, that alters the thing.

2327. (*Mr. Martin.*) Hygiene is nowhere taught in the civil schools in this country, is it?—I suppose a man to get his commission when his knowledge, medically speaking, is complete; and for the rest I say the regiment is the place.

2328. Did not the historian of the Duke of Wellington's campaigns complain that in consequence of the absence of preparatory instruction, shoals of assistant-surgeons were sent out whom he described as "ignorant of war and of their own profession?"—They were not assistant-surgeons, that was the thing.

2329. Meaning by "ignorant of war" that they were ignorant of those military instructions which he considered preliminary to entering upon the duties of an army medical officer?—From what I heard Mr. Guthrie say, they were not assistant-surgeons at all, they were without civil diplomas.

2330. (*President.*) Is there not a great deal of sanitary knowledge required in an army medical officer which is not required in a civil medical officer?—I think it is equally required in a civil practitioner, but he has not the same constant necessity for the application of it.

2331. He has to form hospitals, has he not?—Yes.

2332. He may be consulted on the questions of health or of encampments?—Yes.

2333. And upon the question of the wholesomeness of the rations?—Yes.

2334. Ought he not to have received some instruction upon those things?—Yes, I imagine every medical officer to have that; he cannot have learnt physiology without it.

2335. Is there not a great deal of speciality in the army medical service?—Sanitation has become a separate science; it has been in some measure taken out of the hands of medical men.

2336. Ought it not to be brought back to the medical men in the army?—I think it ought to be left to them.

2337. (*Mr. Martin.*) Is not the influence of external causes in producing a disease a very abstruse and difficult subject?—Yes, but I think that every medical man has to study it.

2338. You are aware that the mortality in the navy from having been at one time upwards of 7 per cent. per annum is now reduced to under 2 per cent. per annum?—I am aware that there is an immense reduction.

2339. Do you apprehend that that great saving of life has been brought about by any improvement in medicine and surgery, or has it not been rather the result of the application of sanitary regulations?—Yes, as introduced by the medical men of the navy, who had no instruction in sanitation further than they all obtain in learning physiology.

2340. Did they not acquire that knowledge in the navy originally at the expense of the seamen's health?—Of course they did; every experience costs something.

2341. Do you think that the medical officers are sufficiently consulted at present by the commanding officers on sanitary points?—I do not.

2342. Are they consulted at all?—They are consulted when it is convenient.

2343. (*Mr. Stafford.*) Are their suggestions disregarded?—Very often.

2344. (*President.*) In a hot climate if a commanding officer selected an hour of the day for his parades that would be detrimental to the health of the men, would the medical officer think himself justified in interfering with the orders upon the subject, or would it be his duty to do so?—The medical officer would not know exactly how he stood, but he would as a matter of course go to the commanding officer and give his opinion, and the commanding officer might say, if he was in that humour, "When your opinion is wanted, you will be asked for it.

2345. (*Sir H. K. Storks.*) Did you ever make such a recommendation and receive such an answer?—Yes; not in those words but equivalent to them.

2346. (*President.*) The medical officer would be guided a good deal by his knowledge of the character of the commanding officer?—There are certain commanding officers that a medical officer would not go near at all; he would be deterred; he would not submit to insult.

2347. It is not a matter of regulation?—No, the medical officer does not know how far he is to take the initiative, nor does the regulation say how far the commanding officer is to listen to him.

2348. There is no regulation that the combatant officer should ask the opinion of the medical man, and there is no regulation that the medical man should offer an opinion?—The medical officer does not know how he is placed.

2349. Upon that point there is no regulation?—No.

2350. (*Sir H. K. Storks.*) Do you think it is the practice for medical officers to be insulted by their commanding officer?—No, it is not the practice.

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2351. Is it within your knowledge that that has often occurred ?—Not so far as insulting goes. He is told what is equivalent to it, "When your opinion is wanted, you will be asked for it," if not in those words.

2352. You used the word "insult" ?—I should say if a man's opinion is disregarded in a curt manner, it is an insult, and you do not like to put yourself in the way of it.

2353. (*President.*) You were in the Burmese war, were you not ?—Yes.

2354. At that time there was great mortality, in consequence of the troops being fed upon salt meat when they could have been supplied with fresh meat ? —Yes.

2355. Did the medical officer make any remonstrances upon that subject ?—I did myself, several, and I have them here ; but notwithstanding my remonstrances the salt meat was continued.

2356. Was it possible to get fresh ?—Yes, at one sixth of the price.

2357. Upon what ground was it refused ?—The ground was not stated to me, but I understood that the general commanding considered that, as the sailors lived upon salt meat, he did not see why the soldiers should not do the same.

2358. (*Sir H. K. Storks.*) Who was the general commanding ?—General Godwin. My report was published, under the sanction of Lord Dalhousie, by a medical officer who was then his own medical attendant ; therefore, I imagine what is put down here will be received as true. This is a letter that I wrote with reference to sanitation, dated Rangoon, April 20th 1852, addressed to the adjutant of my regiment. The medical officer cannot go to his commanding officer, he must go to the adjutant. Upon such a point, I think the medical officer should be entitled to go to his commanding officer.

2359. Where do you find that laid down ?—The commanding officer laid it down.

2360. What regiment are you referring to ?—The 80th.

2361. Was that a standing order of the 80th Regiment ?—You could not act otherwise.

2362. There is nothing in Her Majesty's regulations to that effect ?—In my former regiment, the 29th, I could go to the commanding officer.

2363. Why could you not go to the commanding-officer in the 80th?—The commanding officer chose to act otherwise, and the practice was established.

2364. (*Dr. Andrew Smith.*) Have you ever addressed a letter to your commanding officer, and received an answer from the adjutant, instead of from him ?—Yes; you never receive an answer direct from the commanding officer.

2365. (*Sir H. K. Storks.*) Do you mean that when you were surgeon of the 80th regiment, you could not make a personal communication to the commanding officer ?—I might go to him ; but, if I wrote a letter, I was told to address it to the adjutant. The letter which I wrote on the 20th of April was as follows :—
"Sir, I request you will be good enough to bring to "the special notice of the commanding officer the "melancholy prevalence of bowel-complaints and of "cholera in the regiment, and my observance amongst "the men of symptoms threatening the introduction "of the scorbutic type of dysentery, which occasioned "so much sickness and mortality in the last Burmah "war.—2. The evils here pointed out as existing, and "to be anticipated, can, I am humbly of opinion, only "be successfully met or obviated by placing the "soldiers, without delay, upon a wholesome ration of "fresh bread and meat, with vegetables, to the total "abolition of the highly-objectionable ration of salt "meat and biscuit, upon which the men have been "exclusively fed since the 7th instant, notwithstanding "the General Order, B.F.F., No. 2, Rangoon, "16th April 1852, placing troops and establishments, "from that date, upon shore rations." That was the order, but they never got it ; the commissariat had not it to give.—"3. The salt rations, so unsuited "to a hot climate, together with the constant exposure of the men to excessive heat, night dews, "crowding, and most unusual fatigues, appear to me "fully to explain the prevailing sickness ; and I beg "most strongly to urge, for submission to the higher "authorities, the immediate necessity of removing "all the morbid agencies here mentioned." That refers to the salt meat.—"4. I have also to request "that my inability to procure bread, milk, eggs, and "other similar articles forming the prevalent and "prescribed items of diet for the sick hospital, may "be brought to the notice of the authorities."

2366. (*President.*) Were those things procurable? —I could not obtain them.

2367. Could they have been bought ?—The commissariat were not provided with them.

2368. (*Sir H. K. Storks.*) Was the shore ration procurable ?—I do not know what facilities the commissariat had.

2369. What answer did you get to your letter ?— The only answer that I got to that letter, I believe, was that there was nothing to be done.

2370. Was that answer verbally, or by writing ?— Verbally, by the commanding officer.

2371. (*President.*) You stated that at that time fresh meat could have been procured at a sixth of the price ?—Not just at that time. Subsequently, salt meat was continued when fresh could have been got.

2372. Did you continue your remonstrances at a later period?—Yes; I made two or three remonstrances afterwards. I entered in my report thus, and the report was sent home to Dr. Smith :—"The inhabi-"tants having fled with all their property, fresh "rations could not be supplied till the 23rd of April, "or eleven days after the landing ; so that as respects "H. M.'s 80th regiment, the men had been on salt "rations from the 20th of March to the 23rd of April, "with the exception of the nine days at Moulmein. "After the 23rd of April salt ration was continued "twice a week, notwithstanding fresh meat was abun-"dant and less expensive."

2373. Did you make representations at that period? —Constant representations ; but I have no record of them, nor do I think that I ever got a written answer.

2374. With regard to the tents and the encampments, are the medical officers consulted as to the sites of the encampments, and the quality of the tents ?—They may, or they may not ; there is no rule about it ; the commanding officer may do so.

2375. If a new barrack was being built, would the medical officer be consulted as to the site ?—I am not aware that he would in this country ; in India, there was an order that the medical officer should be consulted ; that system was introduced by Lord Dalhousie.

2376. (*Dr. Andrew Smith.*) Were you ever asked by a commanding officer, when he intended to encamp, what your opinion was of the ground ?—Yes, I have been asked

2377. (*Mr. Martin.*)—Was that in India?—Yes.

2378. If commanding officers were to see that the medical officers were highly informed upon sanitary questions, would they not then be disposed to receive them and accept them as their constituted and official advisers on such matters ?—I think that would depend upon the consideration that the public give to the subject ; if the public are fully impressed with the value of sanitary arrangements, the commanding officers will, of course, be inclined to listen to them.

2379. That is, public opinion would be brought to bear upon the question ?—Yes.

2380. (*President.*) If it was made a matter of regulation, that medical officers should be consulted upon such subjects, though of course their opinion must give way to strategic considerations, do not you think that commanding officers would hesitate before they disregarded such an opinion ?—I think they would ; there are many points in military discipline that are opposed to sanitary principles; a commanding officer likes his regiment compact, and he does not like to spread them about.

2381. (*Sir H. K. Storks.*) In tents?—Yes; he likes to have them compact; and the company officers object if their men are much spread out, they cannot keep an eye on them so well.

2382. (*Mr. Martin.*) You have been a good while a regimental officer, have you not?—Yes.

2383. Do you think that the commanding officers, and the officers generally, feel an interest in the health of their men?—I do not think the company officers interest themselves much in it.

2384. Do you think that commanding officers feel an interest?—Yes.

2385. Do they visit their hospitals frequently?—Some of them do.

2386. As a practice, how often do they do so?—I think, as a practice, once a week.

2387. Do they merely walk through the wards, or do they take an interest in individual cases?—I think that the commanding officer generally shows an interest; the orderly officer comes daily and asks if there are any complaints. I do not think that commanding officers of companies generally interest themselves very much.

2388. (*Mr. Alexander.*) Do you consider that sanitary knowledge is of the utmost importance to a military medical officer, and is he not the officer best qualified in the service to give an opinion?—Yes.

2389. Is the medical officer consulted as to camps and hospitals, with regard to their construction, drainage, and sewerage?—The medical officer is not always consulted. He does not know how far it is his business to come forward and give his opinion. If he were to do so, he might meet with a rebuff.

2390. (*President.*) Looking to the importance of the advice that he gives, do not you think that he ought to be protected by having his position in that respect defined by instructions?—I think that that is very essential.

2391. (*Mr. Alexander.*) Ought he not in your opinion to be consulted upon those important matters, as being the best capable to give an opinion upon such subjects?—Yes; I remember an instance where a parade in contiguous close column was ordered on the 2d of June, at Dinapore, by the general commanding, to read a court-martial. The square was rather small. There were four regiments, besides artillery, and they were ordered to parade in line of contiguous close columns, which at such a time I thought very objectionable, and I immediately addressed the commanding officer on the subject.

2392. (*Sir H. K. Storks.*) The commanding officer of the regiment?—Yes; of those assembled, I said, there was no calculating what the risk to the health of the men was. I addressed my own commanding officer, and I said at the same time, that I thought such an assembly in contiguous close column, at such a season, was attended with great risk.

2393. (*Mr. Martin.*) Had you on that occasion any instance of heat apoplexy?—We had cholera at the time prevalent. My commanding officer took up the thing. The court-martial had been already read to his regiment, and in forwarding my letter he mentioned that circumstance to the general, but there was no relaxation in the order, further than that the 80th regiment might parade in quarter-distance column.

2394. Was that a general of Her Majesty's army, or of the Indian army?—Of the Indian army.

2395. (*Sir James Clark.*) Did any evil arise?—Cholera was much more prevalent afterwards, as I expected it would be, and my report still exists to that effect.

2396. (*Mr. Alexander.*) Have you found difficulties at Chatham in carrying out sanitary arrangements, even of the most trivial nature, such as with regard to deficient drainage, leakage, and sewerage?—There is the difficulty, as you have to apply here, there, and everywhere.

2397. What course do you take?—I should have to apply to the commandant to get it done, and he refers it to the engineer, who is, perhaps, busy.

2398. Ought you not to have it in your power to desire such matters to be repaired immediately, directing the purveyor to obtain hired labour for the purpose?—Yes; I consider that a general hospital should be efficient in itself in all its parts.

2399. (*Sir H. K. Storks.*) You would have a perfect establishment?—Yes; so that we could do our own washing, and obtain our own supplies, and everything.

2400. (*President.*) What is your opinion as to the relative advantages of regimental and general hospitals in the field?—I think that the early part of the war in the Crimea showed that the regimental hospital system was not sufficient. All the regimental hospitals were defective; they had not an establishment adequate to meet the demands that were made upon them.

2401. (*Sir H. K. Storks.*) And they broke down?—Yes; showing that in war when there is any pressure you require a general hospital in the rear; I would have a divisional hospital in the front.

2402. (*Mr. Stafford.*) Do not the men like the regimental hospitals best?—I think they do.

2403. (*Mr. Martin.*) Are not general hospitals esteemed in the army as necessary evils?—Not as evils. You cannot move before an enemy with your regiment encumbered with sick and wounded, and you must send them away; you must have a general hospital. The evil in the Peninsular war was this, that if you sent every man away because he could not march the next day you lost his services for a month, whereas if you could keep him for 48 hours you would only lose his services for that time, and therefore regimental hospitals were established.

2404. (*President.*) You say that you would have a general hospital for the purpose of receiving all those cases which could not be cured quickly enough to enable them to rejoin their regiment, and a regimental hospital for all the lighter cases?—I would have a divisional hospital; it would take much fewer appliances; if you complete every regimental hospital you must have duplicates and triplicates of a number of things; you must have in each, for instance, a set of all kinds of instruments.

2405. You think that the formation of a divisional hospital for those purposes would cause less trouble and labour than a multiplication of regimental ones?—Yes; with a division in the Crimea, the purveyor having every morning to serve extras or medical comforts for several regimental hospitals, had much more trouble than he would have had with a divisional hospital.

2406. (*Mr. Martin.*) The general hospital, you recommend, should not be a larger one than the divisional hospital?—I think a divisional hospital is the thing, with the power of detaching. You might have many comforts in a divisional hospital; you might carry a bath as a divisional bath, but every regimental hospital could not carry it, and you might carry very many things which perhaps every regiment need not carry; perhaps every regiment would carry a pot of belladonna, and one pot would answer for the whole division.

2407. You are aware that the great general hospital at Coimbra and Abrantes, contained 12,000 and 15,000 men, and the evils that were generated there were of a terrible nature, and not of inferior character to those of the general hospitals in the wars of George the Second; that new diseases made their appearance, and that they did not cure the old ones; that discipline was neglected, and the moral and physical evils were enormous?—Yes, it was very bad. If you accumulate 15,000 sick anywhere it is a very bad plan, but a general hospital would be limited.

2408. (*President.*) But the reason for accumulating them is, that there is no means of keeping them apart?—I think that now-a-days they would never accumulate 15,000 in that way; they would send them home.

2409. (*Dr. Andrew Smith.*) In the case of a divisional hospital it would only be applicable provided a large division were close to it?—I think that in European wars you never move less than divisions. In India the regimental hospital system is perfect.

2410. Would it not be necessary that the divisional hospital should be so central that all the medical officers of the regiment could go there and attend it?—Yes.

2411. Suppose that a division was so scattered that that could not take place, and that you had no regimental hospital, how would you meet that difficulty?—I would do as the French do. I would allow one tent where a man might get an emetic, but the ambulance should call morning and evening, or I would send the sick man at once to the divisional hospital, and the regiment should be perfectly unincumbered.

2412. How many regimental medical officers in that case would you have?—The same as now. Every regiment should be required to attend to its own sick in the divisional hospital.

2413. Suppose that a regiment were at such a distance that the medical officers could not walk easily to the divisional hospital twice a day?—I do not think that before the enemy that would ever be the case. It was not so in the Crimea. The hospitals were generally very close together. In fact they were divisional hospitals.

2414. (*Mr. Alexander.*) When the third division established their hospitals, had they not, in consequence of the effluvia arising from sickness, to separate and detach their hospital marquees, and to spread them over a greater extent of ground than in those divisions which had only regimental hospitals?—No, I am not aware of that. The third division was about the most healthy in the Crimea.

2415. Do not you think that regimental hospitals established immediately behind the regiment have many advantages compared with regimental hospitals clubbed together in the field?—I should say, looking at the efficiency of the regiments in the field before the enemy, that a divisional hospital or regimental hospitals clubbed together in the rear is the best plan. In the Crimea we had the enemy fixed in lines in the front, and if the army had been moved you could not have had the hospitals with the regiments.

2416. Why not?—You must have them in the rear somewhere.

2417. Could not you lay down certain rules, and say that a surgeon is to carry with each battalion a certain portion of bedding with a waggon containing medicines and stores for a certain time, and allow him to treat cases?—I suppose that there is a regimental medical officer always on duty with the regiment, and if any man says he is sick he is taken to this medical officer in a tent where there is a sergeant. The surgeon sees this man and perhaps he finds that he has been drinking, and he gives him an emetic, and says, "Let him lie down here, he will be all right to-morrow morning." But if he has an attack of fever coming on he would be a fortnight sick, and he would say, "Call the ambulance and send him to the divisional hospital." And the divisional hospital must be on that scale that you might contrive to carry on a certain number, or send them to the rear.

2418. The divisional hospital would move every day with the division, would it not?—Yes; but I may say that a divisional hospital would be able to afford this man conveniences that a regimental hospital could not.

2419. (*President.*) Is it possible to lay down in this room any rule upon a subject which must vary with the peculiar circumstances of each campaign?—No; I agree with that; I think that the regulations on service must be extemporized in a great measure to suit the climate and the nature of the service.

2420. In peace do you think that we have a sufficient number of general hospitals, taking England and the colonies all together, to let the medical officers see how a general hospital should be conducted and organized, so that in war they would know how to do everything?—I could not say that we have not got a sufficient number. I do not know where they are.

2421. Would you have a general hospital at a place where you have a very large garrison, for instance Gibraltar and Malta?—I should think that a general hospital must be necessary there; say that a regiment is ordered away, it is necessary that they should have some place to send their sick to, and not to a regimental hospital; but I do not know that there is not a general hospital at Malta.

2422. Have you ever considered the subject of the ration of the soldier?—I have, but not in England much; I did in the Crimea a good deal, and in India also.

2423. The ration at present supplied to a man, and which is given to him by warrant, and which is sufficient for his maintenance in perfect health and efficiency, is a pound of bread and three-quarters of a pound of meat?—Yes.

2424. Do you think that the meat requires a corrective of some kind?—Yes, it requires vegetables.

2425. At present, at home the soldier is compelled by his commanding officer to provide himself with vegetables, and sufficient food for a third meal?—Yes, and there is a deduction on that account.

2426. When the army was in the Crimea did that system answer, or did they abandon it?—The system there was perfectly different; the commissariat supplied everything.

2427. It was found necessary that the commissariat should supply everything?—Yes.

2428. And there was an additional stoppage levied upon the men for it?—I was not aware of that.

2429. Are you acquainted at all with the rations of other armies?—No.

2430. You do not know the Russian ration?—No. I saw some Russian bread which was very black indeed.

2431. Do not you think that the Government ought to supply the soldier with such a ration as shall at all times keep him in a state of health and efficiency?—I think so.

2432. There should, you think, be vegetables and that kind of nutriment which is necessary to correct the effects of a diet consisting merely of bread and meat?—Yes.

2433. The difficulty in the Crimea arose at first from the commissariat not being accustomed to supply those things; they were not prepared to supply them, and the men could not obtain them?—Just so.

2434. (*Sir H. K. Storks.*) Do you think that the ration at home is sufficient to keep a young man doing the usual duties of a soldier in good health?—I think at home they thrive upon it; you see poor wretched recruits in a very short time become stout.

2435. (*Dr. Andrew Smith.*) Do you think that three-quarters of a pound of meat, considering that it contains a certain portion of bone and a little fat, is sufficient for a vigorous able-bodied man, with heavy duties to perform?—I think that a pound would be better. I think it is a small quantity; but if you go through the garrison at Chatham you will find all the young soldiers looking very stout and well indeed; of course they must buy things.

2436. (*President.*) Do they depend upon the ration entirely?—No; they drink a good deal of porter, you see them bursting with fat.

2437. (*Dr. Andrew Smith.*) Would a servant of yours be satisfied with three quarters of a pound of meat?—I think not.

2438. (*Sir H. K. Storks.*) Do you think that the cooking of the soldiers' rations is very good, or is it good at all?—I think it is very good.

2439. You think that it is not a bad thing for men always to eat the same sort of dinner every day?—That is a matter of economy and arrangement. If you choose to adopt a variety, well and good; but I think he lives very well on the same.

2440. (*Mr. Martin.*) Is it not found in all countries that a mixed diet is most conducive to health?—Yes.

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2441. (*Dr. Andrew Smith.*) How much out of the three-quarters would be lost by cooking, and by getting rid of any bone that there might be in it?—I think if you take 12 ounces of meat, it would appear after cooking three or four ounces short.

2442. (*Sir James Clark.*) Do you know how the sailors are dieted; do they get a fixed diet without deductions; might not that system be adopted in the army without stoppages?—I think it might be greatly simplified.

2443. (*President.*) You do not see any objection to the monotonous cooking, for 21 years, the same diet every day?—I confess that I have not observed any; I think that habit has a good deal to do with it.

2444. (*Mr. Martin.*) Is it not held by the profession that sameness in diet, even without the intervention of salt rations, will induce a scorbutic state, if extended over a long period?—I cannot immediately give an opinion upon that.

2445. Do they not find in the French army, that confining the men to biscuit for a length of time has an injurious effect?—I look upon biscuits as very inferior to bread.

2446. Not only inferior, but that the sameness of the ration produced scorbutic effects?—I think that a man might eat bread every day, but not biscuit for more than three months.

2447. (*Dr. Andrew Smith.*) Have you not observed at Chatham, on Sundays particularly, a great number of men in the garrison carrying dishes to be baked?—Yes.

2448. Does not that show that they like a change?—Yes.

2449. (*President.*) Are you aware that at the Cape our troops, from living upon fresh meat, suffered from scurvy for want of a variety?—I think that meat diet exclusively would be injurious.

The witness withdrew.

T. Alexander, Esq., C.B.

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THOMAS ALEXANDER, Esq., C.B.

2450. (*President.*) You are inspector general of hospitals?—Yes.

2451. Have you turned a good deal of your attention to the subject of education and the conditions which you think ought to be required from candidates for the army medical service?—Yes.

2452. Would you require a medical as well as a surgical diploma from such candidates?—Yes; as military medical officers, generally speaking, treat cases that come under the head of general practitioners, it will be necessary that they should attend classes for all these branches.

2453. Including midwifery?—Yes; because they have to practise it occasionally.

2454. Would it be advantageous to have some examination into their general education?—Yes, it would be of service.

2455. It being a better test of a man's capacity?—Quite so.

2456. Would you make examination for admission by a medical board practical?—Decidedly so, and competitive.

2457. As much so as was described by Mr. Paget in the evidence which he gave here?—Yes.

2458. Would you prefer a separate body of examiners; suppose, for instance, that an arrangement could be made that for the army, navy, and East India Company there should be one board of examiners?—I should prefer a separate body of examiners, because being accustomed to examine, they would be much more likely to test the capacity of candidates than men who only occasionally do so.

2459. Would you have any second examination before their promotion to a surgeoncy?—It would be difficult to do that; but if you could induce officers to keep up their knowledge it would be advantageous.

2460. Should you say that there is a tendency in young men, on joining the army, to be led away by the habits of the regiment from their professional studies?—Quite so.

2461. Would not the prospect of an examination tend to limit that evil?—Yes, it would.

2462. (*Sir H. K. Storks.*) Has a regimental surgeon any power to make his assistants improve themselves in the knowledge of their profession?—He cannot compel them to study, but he can give them certain duties to perform, and advise them to study.

2463. (*President.*) You would make the second examination a more special one than the one under which he had been admitted originally?—A more practical examination concerning the treatment of disease, hygiene, and all that is connected with his real duties as a regimental surgeon.

2464. Everything relating to the specialties of military life?—Yes, and a general knowledge of his profession.

2465. Where do you contemplate that the candidate should acquire any knowledge of the theory of military hygiene?—In the large general hospital at Netley. I would recommend that three lecturers should be appointed permanently, who would give clinical lectures on medical and surgical cases, and also on pathology and morbid anatomy, and teach the practice of operative surgery, and so on.

2466. (*Sir James Clark.*) And military hygiene?—Yes, of course, everything connected with hygiene.

2467. (*President.*) Would Netley be a good place for that purpose? Would the number of cases be sufficient to afford examples of what was taught?—Yes, but they would be all chronic cases; still they would see the sequelæ of the diseases, the termination of them; they could also study pathology, the use of the stethoscope, operative surgery, and hygiene.

2468. Do you think that those chronic cases, so far as military hygiene was concerned, would be more useful than acute cases?—They would be very useful; at Netley they would see the termination of the disease and be prepared to recognize and check it in practice.

2469. Do you think that Netley is better adapted from its position than Chatham for invaliding?—Yes; it is more convenient for invalids arriving from foreign stations.

2470. How long would you keep a probationer at Netley before you sent him away?—For several months, so that he should learn hygiene and all the different returns and reports, also the diet tables connected with the department, field equipment, &c.

2471. Would you appoint him in the first instance to a regiment?—Yes, to a regiment, because he would then become acquainted with regular military duty.

2472. Is it customary to appoint him indifferently to a regiment and to the staff?—I believe so.

2473. You would have him go through a regiment first?—Quite so; on the staff a man may be for years and know nothing of regimental duty, at least not sufficient; but in a regiment he becomes better acquainted with the habits of soldiers and military life.

2474. (*Mr. Martin.*) Do you look upon a regimental surgeon as the most important medical officer in the army?—Yes.

2475. (*President.*) Do you agree with Dr. Taylor as to the advantage of allowing periodical returns home from foreign stations, on leave of absence, for the purposes of professional study?—Yes, I should recommend so many months' leave for every year's service abroad, so that an officer on returning home might have an opportunity of proceeding to some

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medical school, and there improving himself in his profession.

2476. Would you give that to staff, as well as to regimental surgeons ?—Yes, to both.

2477. Would you make the officers avail themselves of that opportunity ?—I think that the great majority of them would.

2478. (*Sir H. K. Storks.*) How would you insure that they had spent their time in study; would you have an examination to test their improvement ?—They might be called upon to produce certificates of attendance.

2479. That would not be made, you think, an excuse for idleness ?—No, not by the great majority.

2480. Could you rely upon the certificates ?—They would be some test.

2481. I suppose you would make Netley a model on which other general hospitals should be formed ?—Yes; at Netley I would have the museum brought from Chatham, and the library, and I would have a model room for improvements, and models of hospitals and barracks, ambulances, and camp equipages, &c.

2482. Would you have phthisical wards ?—Yes, and that would save an immense deal of misery. Many poor wretches are discharged, who go amongst their friends where they can get no assistance; and it would save a great deal of misery if a few wards were established for such cases.

2483. Would you also have quarters for sick officers ?—Yes, as in the navy.

2484. And lunatics ?—Yes. I think it would be advantageous to have a lunatic establishment attached to the general hospital and adjoining it.

2485. Would the lunatics be better treated there than if you sent them out into private establishments?—Yes, provided you have men equally qualified to treat them.

2486. You could not carry on the duties of the lunatic asylum by taking officers in their turns ?—No. You must have men specially appointed for that duty, men accustomed to the treatment of lunatics, and if found well qualified they should be permanently attached.

2487. (*Sir Thomas Phillips.*) That would also be the case as to the teachers at Netley ?—Yes.

2488. (*Dr. Andrew Smith.*) You stated that you thought every medical man entering the army ought to have a surgical diploma and also a medical diploma, in order to insure that he had studied in all the different branches of the profession. Do not medical students at the present time study all the different branches of the profession ?—I believe for the London surgical diploma they do not require it. They do in Edinburgh and in other places. I may be wrong, but I think it is purely surgical in London.

2489. Would you propose that they should be all compelled to take a degree of a university, or to be all examined previously by the Apothecaries' Company ?—Those in London should produce certificates or diplomas of having passed the Apothecaries' Company, or any college that was deemed requisite for general practitioners.

2490. In the case of Edinburgh what is the practice?—In Edinburgh all those branches are taught. There they are examined for their diploma in those separate branches, but I believe in London they are not.

2491. Would you consider the Edinburgh diploma a sufficient test ?—The holding of an Edinburgh diploma would be a test that he had been examined in physiology, the practice of physic and midwifery, and other subjects; but I do not conceive a London surgical diploma would.

2492. How would you receive a diploma of the Dublin College of Surgeons ?—On the same principle. I should ascertain by inquiring whether their diplomas were granted after examination in those various subjects, and if so, I should receive them as satisfactory.

2493. That would be a question to ascertain beforehand ?—Yes.

2494. With reference to the second examination, supposing it were considered desirable, how could it be carried out ?—In the navy they carry out a second examination.

2495. But suppose an old assistant-surgeon in New Zealand, perhaps the senior, and according to practice entitled to be the first promoted, how would you get his examination effected ?—It would be very difficult.

2496. (*Mr. Martin.*) Might he not be promoted, subject to an examination, on returning home ?—Yes; but if service by roster, and fixed periods for service abroad and at home were established, you would then bring officers home in a very few years. There are difficulties in it, but by requiring a second examination you would induce a medical officer to keep up his professional knowledge.

2497. (*Sir James Clark.*) Does it often happen that an assistant-surgeon from the time he gets his appointment to the time of his becoming full surgeon, is out of the country ?—Quite so. But if a roster were established, those officers would come home more frequently.

2498. (*Dr. Andrew Smith.*) You stated that in the hospital at Netley there would only be chronic cases; now as it is usual wherever an invalid hospital is established to have from 500 to 600 invalids in the hospital, and as at Chatham nearly one-third are acute cases, perhaps a man takes cold and is attacked with pneumonia, would not that supply a tolerable amount of acute cases ?—Yes; but the generality of cases there no doubt would be chronic.

2499. About a third of the cases at Chatham are acute ?—But the acute cases attacking invalids would be of a different type from those which attack healthy men.

2500. Would it be practicable to send every candidate in the first place to a regiment ?—I think it would be desirable.

2501. Would it be practicable ?—I have not made a calculation; but if you appointed every man at first to a regiment, and after being in it for so many years, held out the inducement of becoming staff assistant-surgeon, and having charge of the staff at the different stations, I think you would make it practicable.

2502. Are you not aware that the rule at present existing is that no man shall be eligible for the rank of surgeon before he has served a certain time in a regiment ?—I was never a regimental assistant-surgeon.

2503. Have you not heard that for the last five or six years that has been the regulation ?—I believe it has.

2504. (*Mr. Martin.*) Should there not be a reserve corps of young medical officers ?—There ought to be a larger staff.

2505. For the service of the colonies ?—Yes.

2506. Upon any foreign expedition being formed such a corps would be doubly necessary ?—Yes; it is no reserve corps, but they go to the colonies from home.

2507. Is there a reserve corps of them at Chatham under instruction or anywhere else ?—No. If you were to grant leave, as I propose, and establish a roster, you would require a larger staff, and have, consequently, more officers for any emergency.

2508. Was not the want of such a reserve corps felt very early in the recent war in the east, and especially from the landing at Eupatoria ?—Yes; civilians were brought in.

2509. Does not it always result on foreign expeditions that, in consequence of wanting such a reserve corps, they are obliged to introduce unqualified young men from the schools, untrained to their military sanitary duties ?—If you want medical officers, and have not a sufficient number, in the event of war you must either take civilians, employ them and pay them well, or you must take assistant-surgeons without sufficient qualifications, or the experience that is necessary.

2510. Therefore such a reserve corps would be valuable ?—Yes; a larger staff.

2511. (*President.*) Would the existing general hospitals and the regimental hospitals give sufficient practice and employment to keep a larger number of

men up to the mark in their profession ?—Yes, provided you gave a fair share of leave to the medical officers in the army, in order that they might take advantage of it, and improve themselves in professional knowledge.

2512. (*Sir Thomas Phillips.*) Would your plan be this ; would you test a candidate in the first place by ascertaining in some satisfactory manner that he possessed medical and surgical knowledge, and would you then send him to the large general hospital, where he would not only have opportunities of practice, but where he would also see the management of a large establishment, and in that way get into the routine of his public duty ?—Yes.

2513. Then I think you say you would promote him to be assistant-surgeon of a regiment ?—I would appoint him, it is not promotion.

2514. What would be your routine afterwards ?—He should remain in that regiment until he was either promoted, or, as I suggested, until he was removed to the staff ; after having been so many years in the regiment he might be appointed to a station, such as Nova Scotia, or other stations in charge of the staff.

2515. I thought you stated that you would appoint at first an assistant-surgeon for a certain time to a regiment ?—Yes.

2516. Should he be assistant-surgeon on the staff next ?—Yes ; both are of equal rank.

2517. Would you retain the appointment of assistant-surgeon on the staff too ?—You must have them on the staff too.

2518. Would you have all assistant-surgeons indiscriminately regimental and staff, or would you send them through a regiment to the staff ?—My opinion is this, that an assistant-surgeon should go first, after he leaves Netley, if possible to a regiment where he would become acquainted with military duties, and would associate with officers, and where he would be looked after, instead of being a staff assistant-surgeon going to a station where he is left to his own resources to do as he thinks proper.

2519. Would he become an assistant-surgeon on the staff ?—That does not follow.

2520. You do not think that is necessary ?—There are perhaps not vacancies enough. I think some men prefer a regiment and others the staff, but I would hold out to the staff assistant-surgeon an inducement, and give him such a charge as Nova Scotia, &c., where he would attend the general and his family, and all the staff officers and their families, &c. Then these staff assistant-surgeons would get lodging money and horse allowance, besides escaping the expenses of a mess ; it would be a sort of boon to them.

2521. It would be in fact an advantage to them ?—Yes ; it is thought by some a more desirable service, but I would first if possible send a man to a regiment to learn regimental duty, to be looked after and to associate with the officers.

2522. (*Dr. A. Smith.*) Are there not certain other objections, namely, that they are put to extra expenses ?—Yes, there are difficulties.

2523. With the present rate of pay medical officers with no private means are totally incapable of meeting the expenses of the change ?—There are expenses; but many changes take place now from staff to regiment, according to the exigencies of the service.

2524. (*Sir T. Phillips.*) It would be hard to expose them to such expenses without giving them some better pay ?—It is done so now.

2525. (*Sir H. K. Storks.*) Would it be desirable to give regimental surgeons more authority than they have now over their assistants to make them work ?—I do not see how you could compel them to work. There are certain duties which they are called upon to perform under the superintendence of the surgeon ; but you could not compel an assistant-surgeon to go to his room to read for so many hours.

2526. (*President.*) Within a hospital do you consider that the medical officer might be relieved from much work that he now performs, if the purveying were put upon a better system ?—Yes ; the purveyor, I think, ought to have charge of all hospital furniture, hospital dresses, and everything requisite for an hospital, and they ought to be supplied at once, without any requisition, according to the number of patients. He ought also to purchase or make contracts for all the dieting of the patients, and the washing ought to be done under the purveyor by hired labour ; kitchens with good ranges for roasting or baking, so as to vary the diets occasionally, and laundries with drying rooms should be attached to each hospital.

2527. He should be the steward of the hospital and have it complete in every respect ?—Yes.

2528. That would get rid of many requisitions, the writing of which now falls upon the medical officer ?—Yes, and also of the barrack department having hospital stores in their possession.

2529. Do you think that you could shorten his duties by a simplification of the returns ?—I think, with regard to the diet table, you could simplify the duty by having it monthly instead of daily, as at present, entering the name of every patient : were all the returns printed and condensed you would save an immensity of labour ; in a great majority of cases I conceive that merely entering the name in the admission and discharge book, or in a tabulated form book, would be quite sufficient, you could have the "name of the patients," the "disease," the "regiment," when "admitted," "died," or "discharged," with a short summary of his treatment, which I think for the majority of cases would be quite sufficient.

2530. What would you insert in the register ?—The most interesting and the acute cases.

2531. Is it a fact or not, that as the registers are now filled they lose their value in a scientific point of view, in consequence of their bulk ?—Yes ; I think if it was laid down as I have stated, you would find that medical officers would take more interest in describing the acute cases than they do now.

2532. (*Dr. A. Smith.*) Are you aware that the necessity for registering those cases has principally arisen from the constant applications from the Chelsea Commissioners and from the Adjutant-General, and from the authorities connected with the invaliding, so that it is necessary that we should have some means of obtaining information, otherwise we could not give the replies that are asked for ?—I think you might have such a book as I have described, and that would give all the information required in one line.

2533. (*Mr. Martin.*) It would give the history of the soldiers' health ?—Yes ; if you chose to give a page for every patient you would have a view at once of every admission, and the history of the man through his whole career.

2534. (*Dr. A. Smith.*) Are you not aware that a medical officer is required to give some sort of statement in the man's discharge document, to enable the Chelsea Commissioners to judge whether he had suffered from certain diseases which were likely to materially affect him in the discharge of any labour he might afterwards undertake, or render him less able to earn a livelihood ?—You would see all this in a tabulated view as I have suggested ; a man may come in and be discharged, and in six months hence he may be admitted again, and every time he came in you would have a tabulated view, so that at a glance you would see the whole history of the man.

2535. Dr. Taylor, from Chatham, within the last six months has written to me with reference to probably 150 cases of men who have presented themselves at Chatham to be invalided. There was a trifling case connected with a man's heel. This man said his heel was injured by a shot, but there was no indication of a shot. An application was made to the regiment, and the return was, that it was so trifling a case when he was admitted, that they did not think it necessary to register it, and the consequence was, that they could not say whether the man had had a shot or not ?—According to the plan I have proposed, you would have the man's whole history in one page.

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2536. (*President.*) Is it not the fact, that a similar record such as you describe, showing the whole of the medical history of a soldier, in the same way that the regimental defaulters' book shows his character, would answer all purposes?—Yes; it would be quite sufficient, in my opinion.

2537. Would not the fact that your record was less voluminous make it more likely that it should be referred to than in the case of a register which was very voluminous, and gave a great deal of trouble?—Yes, and it would be at hand; the registers are left behind when they become too bulky.

2538. If the interesting cases were those which had the predominance in the register, would it not be well to encourage medical officers to record them, for the purpose of securing the advantage of one another's experience by publication, or in some other way to communicate to officers in the army the system of treatment and the results?—If there was an officer whose duty it was to examine all reports, and cull out the facts, data, and interesting cases, then publish them, a great deal of useful information would be obtained regarding the statistics of disease, &c.

2539. Suppose an expedition about to start for China, with many medical officers attached to it who had never been in China before, if the registers of the last Chinese expedition afforded records of the treatment of the peculiar diseases that were then prevalent, would it not be a great advantage to communicate them to the medical officers now going out?—The data, facts, and deductions drawn from the cases would now certainly be of great service to any man going out to that country.

2540. Why cannot that be done from the existing register?—It might be, but it is exceedingly voluminous. You must have a special officer to cull those facts.

2541. Is it the fact that having to write upon a variety of cases, and having to waste some time upon the uninteresting cases, the interesting cases do not get the same amount of care bestowed upon them?—Decidedly not so much care. When I was at Chatham I recollect an assistant-surgeon telling me that he had received an order to write two lines on every patient's case, and on his stating that it was impossible to do so, he was desired to call into play his ingenuity.

2542. (*Dr. A. Smith.*) A great deal more is exacted from officers at Chatham for the purpose of testing a man's abilities?—I think it is laid down in the regulation that every case must be duly registered with the exception of "itch."

2543. (*President.*) Are not the registers in practice so extremely voluminous that they are of very little service afterwards?—The majority of them are of no service at all, at every station there are a lot of old registers which are made no use of whatever.

2544. (*Dr. A. Smith.*) How many years are they required to be kept with the regiment?—Until they are filled up. If you are going abroad, and you report that they are too heavy, you get an order to leave them behind. I think, in the way that the diet tables are now arranged, writing the names of each patient daily, an immense deal of labour and valuable time are spent, and the same could be done equally well on a monthly diet table.

2545. Was the table that Mr. Robertson produced at the last examination an improvement upon the existing one?—Very much so; if it were made monthly, instead of weekly, I think it would do very well indeed.

2546. You are instructed to fill up this list yourself, are you not?—Yes, I think every medical officer ought invariably to mark his own diets.

2547. (*Sir H. K. Storks.*) In figures, or in letters?—In letters; L. for low, and H. for half. I think the ward-master should make out a list of so many halves, and so many lows, and so on, for the purveyor each day for his guidance.

2548. (*Dr. A. Smith.*) What security would you have if that system were introduced, that if half diet was marked in figures a man would not alter the number of diets?—They do not do so, and you must place a certain confidence in men.

2549. Are you not aware that was done, and that that necessitated the adoption of the present plan?—No, but writing it in words would prevent such being done.

2550. (*Sir H. K. Storks.*) When a medical officer arrives at a high rank in his profession, I suppose he cannot afford time to practise in the hospitals, in the general hospitals for instance?—If he is appointed to a general hospital and is in charge of it, it is his duty to go round and see the patients.

2551. But his time is greatly occupied with the returns, is it not?—Greatly.

2552. Does he prescribe?—Not generally speaking.

2553. (*Mr. A. Stafford.*) Does he operate?—Certainly, I always did when requisite.

2554. (*President.*) Should the totalling be done by the medical officers or by the steward in your opinion?—Unless you can place that confidence in your ward-master or steward, the medical officer must do it.

2555. Practically, are the totals always made by the medical officer?—They ought to be, at present.

2556. Is not a great deal of that put upon the steward or the ward-master, merely receiving the signature of the principal medical officer?—Yes.

2557. If you impose too much upon a man, he will evade it?—Yes.

2558. You stated that you were of opinion that the purveyor ought to provide everything for the hospital?—Yes, bed and personal linen and everything requisite for the comfort of the patient, knives, forks, spoons, crockery, and a small table and chair at each bed. I think there ought to be laundries to each hospital, also drying-rooms, and the washing should be done by hired labour by the purveyor, and the same would then be better and more cheaply done.

2559. You heard the evidence given by Dr. Taylor, as to the inferior manner in which the hospitals are treated at Chatham, compared with Melville hospital, belonging to the Marines; do you agree with that evidence?—Yes, I agree as to the difference between the two hospitals, the Melville being so very superior to the others, in every respect.

2560. Do you attribute that to the circumstance that the army medical officers are dependent upon other departments, who have no interest in keeping the hospitals in a state of high efficiency?—Yes.

2561. Dr. Taylor made a statement with regard to the delay caused by applications to the engineers' department; has it come under your observation, whether applications for repairs have either been delayed, or not carried out, or carried out very expensively?—Yes; I made a tour of inspections in Canada, in October last; and at Toronto, I found a privy, the effluvia from which was much complained of, and fit to knock you down, at times. The commanding officer and surgeon brought it before me, stating that they had frequently reported the same, and wished to have it remedied; the simple remedy was, to shut it up, and erect another over the lake. There was another case of a slight leakage, at the hospital at Kingston citadel; it had been reported several times, and not attended to. There was also a drain leading from the privies at Kingston citadel in a most offensive state, and out of repair. A board had sat, and reported its state, recommending that the rain falling in the barracks should be collected into tanks, and the privies sluiced occasionally; but months had passed without the recommendation being carried out. I brought it to the notice of the general commanding, and before I left, I was informed, that it was about being remedied.

2562. (*Sir H. K. Storks.*) Were those expensive works?—No. I spoke to the engineer about the privy at Toronto, and he said that it had been placed in their estimates.

2563. (*President.*) What would be your remedy for those difficulties?—I think that at a certain season of the year an estimate should be sent in of the necessary

expenses of the hospital for the ensuing year, separated from those of the barracks.

2564. (*Sir H. K. Storks.*) Is not that the practice ?—I am not aware of that. I believe they are generally clubbed together. But I would have the principal medical officer to send, as Dr. Drummond does at the Melville hospital, an estimate of the probable amount required for the ensuing year. Dr. Drummond's estimate is sent to Sir John Liddell, who, I believe, sanctions it or gets it sanctioned, and he immediately purchases articles or hires labour to do anything that is necessary or required.

2565. (*President.*) Have you not been called upon once a year to offer any suggestions that you might have to make for a hospital ?—There is a general order; but what is the good of your suggestions unless the same are carried out, which is rarely done ?

2566. If you gave the power to the medical officer, you would give a power to him to order anything that he thought necessary for the sick from the purveyor, and also power to order everything that he thought immediately necessary for the repair of the building ?—Yes.

2567. What financial check would you have upon that ?—He should make an estimate and send it to the director-general; the latter, examining it with the reports, would see whether those were necessary or not.

2568. (*Sir H. K. Storks*). Suppose there were upon a sudden a drain that required repair, and it became very offensive, and it was an expensive work, would you let him have power to do it ?—Yes, if it was not very expensive. I would limit him to a certain amount annually for purchasing certain articles and necessaries; as principal medical officer he ought to have it in his power to remedy those evils at once, and to hire labour so as to have necessary repairs done immediately.

2569. Do you think that a dispenser is necessary to each regiment ?—I think a dispenser ought to be attached to each regiment; and, as you have now good men as hospital serjeants, were they examined and passed the examination required, I would appoint them as dispensers; many of the hospital serjeants are first-rate men, and would make good dispensers.

2570. (*President.*) You would take those dispensers from the hospital staff corps ?—Yes; but I would give a preference to good hospital serjeants, if they were qualified.

2571. (*Dr. A. Smith.*) The medical staff corps is now limited to a small number. Supposing that a man had served in a chemist's shop before he enlisted, and that he could be properly educated, and pass his examination as a dispenser of medicine, would there be any objection to taking that man out of the regiment and putting him into the hospital ?—None, if he was not to be removed, and if you allow him to remain with the hospital; but you must not permit the colonel to take him away when he thinks proper.

2572. (*Sir H. K. Storks.*) Suppose he gets drunk, and misbehaves himself ?—I suppose then you would confine him, or you would try him for the offence. Colonels of regiments often have orderlies and cooks on certain parades, to the inconvenience of the patients.

2573. (*President.*) This new corps is now going to be made a military corps, is it not ?—I think so.

2574. Will it contribute to the efficiency of the service ?—I think that a corps raised expressly for orderlies, cooks, &c., well instructed and retained as such, would be far preferable to the system of taking men from the ranks who are given as a favour, and who may be removed at the whim or caprice of the commanding officer.

2575. They might be removed after they had learned their business ?—Yes.

2576. Would you select servants for the medical officers from this corps ?—I would.

2577. For what rank of medical officer would you do that ?—I think that all staff medical officers ought to have servants granted to them, and as a proof that such is necessary, I have seen myself, in Bulgaria, assistant-surgeons loading their own pack-horses, and leading them on the march amongst the common servants; these men were staff-assistant surgeons. They had granted to them at that time 1*s.* 6*d.* a day, as servant's allowance. Dr. Smith got it increased to 3*s.*; but you could not always get servants for 3*s.* a day. Medical officers on the staff are not allowed servants from a regiment, therefore I would take them from this corps.

2578. (*Sir H. K. Storks.*) Do you think it important that those men who are to be enrolled into this hospital corps should have been soldiers and have acquired habits of discipline ?—I do not think that is of any consequence. I should prefer having good men well selected, even civilians.

2579. (*Sir Thomas Phillips.*) Would you subject them to military discipline ?—I do not see any necessity for that. They would of course be under the Mutiny Act.

2580. (*Dr. A. Smith.*) Would there not be a difficulty in supplying the medical officers with servants from the medical staff corps? Supposing three surgeons were ordered from Chatham to-morrow, and each took a servant from the medical staff corps to go to the West Indies, or to Canada, or to the Cape of Good Hope, and supposing the servant became absolutely useless, you could not replace him; would it not, therefore, be better to make the allowance which is granted by the government sufficient to enable you to engage a good respectable servant from private life ?—In peace time perhaps it would be so, but in war time servants will not stay with you; that happened to myself.

2581. (*Sir H. K. Storks.*) That happens to all officers who do not get soldiers ?—All officers have bâtmen attached, staff officers and all regimental officers have soldiers from the ranks, staff medical officers are the only exception. When in the Crimea I was allowed forage for eight horses, and was allowed by regulation only 3*s.* a day, to provide myself with servants to look after eight horses, cook, and look after my hut; other staff officers are allowed bâtmen in proportion to the number of horses they are entitled to according to their ranks, not so the medical staff.

2582. (*Sir Thomas Phillips.*) You, I understand, propose that articles should be supplied to the general hospital by the purveyor, according to the exigencies of the hospital, and that he should be responsible for whatever is required being provided ?—Yes; the purveyor.

2583. In that case the ward-master would be his servant, I apprehend ?—The wardmaster would be held responsible for the stores that the purveyor had handed over to him, bedding, &c.

2584. Therefore the ward-master would be his servant ?—Yes, so far.

2585. And the purveyor's duties in the ward would be discharged by the ward-master ?—Yes, so far as regarded the hospital furniture and clothing; but the ward-master and purveyor would both receive instructions and be under the direction of the principal medical officer.

2586. The responsibility for the wards would be in the purveyor ?—Certainly, through the ward-master.

2587. And for the state of the ward ?—Yes, their cleanliness by the orderlies and ward-masters, but the medical officer would still be superior to all connected with the hospital.

The witness withdrew.

Adjourned to Monday next at One o'clock.

Monday, 25th May 1857.

PRESENT:

Augustus Stafford, Esq., M.P.	Thomas Alexander, Esq., C.B.
Col. Sir Henry K. Storks, K.C.B.	James R. Martin, Esq., F.R.S.
Dr. Andrew Smith.	Dr. John Sutherland.

President, The Right Honourable SIDNEY HERBERT, M.P.

T. Alexander Esq., C.B.

25th May 1857.

Thomas Alexander, Esq., C.B., further examined.

2588. (*Mr. Martin.*) In the diet of the sick, you are aware that the medical officers are guided by the diet tables. In the Appendix to the hospital regulations, page 109, there is this: "This diet-table being so arranged as to prevent the use of any extras, beyond wine, porter, or spirits"?—You can give fowls and mutton chops, arrowroot, and so on, but you must place the man upon spoon diet; you cannot have him upon half diet, and at the same time give him in addition fowls, mutton chops, or beef tea, or anything—save wine or spirits.

2589. (*President.*) Is that right or wrong, the necessity of putting him on a spoon diet?—It comes much to the same thing, only it compels you to place him on spoon diet, to enable you to give extras.

2590. (*Mr. Martin.*) Would it not be desirable to enlarge and extend the dietary of the sick, thus furnishing more variety, so as to meet the caprices which are known to exist in the dispositions of sick persons?—I think if you extended and varied the diet, you might roast, bake, or stew, and consequently would require fewer articles to be marked as extras.

2591. You would recommend variety?—Yes, I would strongly recommend variety to patients in the hospital; but you must extend the kitchen arrangements, and adapt them for those purposes.

2592. By the regulations medical officers are required frequently to inspect the diets immediately after they are issued, and at times when such visits are unexpected by the servants, do you consider such a duty proper to a commissioned medical officer?—Yes, I think he does a great deal of good by looking in occasionally, and seeing that the diets are properly cooked.

2593. Should not his visits be open?—Yes, it should be done in an open and avowed manner; but the orderly officer does so, also the military medical orderly officer at Chatham.

2594. Do you not think it a duty more suitable for a subordinate than for the surgeon of the hospital?—Quite so; still I think it is the duty of the surgeon of the regiment to visit occasionally, and to see that those diets are good. In Caffreland the dieting was so bad that I went and saw the things weighed and put into the boiler one day. When the dinners were ready I then went and saw them, and told the patients that was the dinner they ought to have, and if they did not get it, to complain; they said they never had had such a dinner before. I saw the diets every day in the coppers while I was in charge at King William's Town, because the hospital serjeant in charge then in the 6th regiment could not be trusted.

2595. Are you aware that no deviation from the sick dietary is admitted, and that the medical officer failing in giving a satisfactory explanation in case of deviation, is made to pay as being the prescriber of the diet, and do you consider that system a proper one?—I am not aware of any medical officer having paid, although I recollect when in Jamaica, a medical officer, being found fault with, who struck off all the extras in his expenditure account.

2596. With regard to the hospital regulation, page 25, article 55, do you consider that in respect of the sick diet rolls, the medical officer should be held responsible for the accuracy of the totals of each roll, or is not that a duty rather proper to a subordinate?—I think that your ward-master or steward could total them perfectly well; placing that confidence in them, as they ought to be good men and worthy of such confidence.

2597. Do you regard the duty of check over the serjeant and others who may be disposed to record articles not duly ordered, a proper duty for a commissioned officer, or should it not rather be under the officer of supply?—The purveyor or officer of supply should check it.

2598. Those are all requirements of medical officers which imply occupation of time?—Yes.

2599. On stations other than home service or where hospital purveyors are not employed, is it for the good of the service that commissioned medical officers should be required to see that every article of diet for the sick in hospital should be delivered and paid for and duly charged in the quarterly accounts?—They are not proper medical duties. I think people ought to be set apart to do those things, and leave the medical men to attend to their professional duties.

2600. When troops arrive at a station having no deputy-purveyor, the medical officer in charge will, according to the regulations, take proper steps for procuring supplies, such as meat, bread, and so on, do you consider duties such as those proper for a commissioned medical officer?—They ought to be done by the hospital steward.

2601. Do you consider that a medical officer, whose duties should be confined exclusively to the scientific service of the hospital, and who is now said to be overlaid with return-making, should be required to receive tenders from respectable tradesmen, and accept such as may be deemed most advantageous, and all to be settled monthly by the medical officer himself?—It is not a medical officer's duty; there should be a steward or a purveyor for such duties.

2602. On foreign stations, when supplies cannot be obtained through the commissariat, is it right towards the surgeon or towards his patients, that the former should be called upon to purchase his supplies, taking care to substantiate by satisfactory vouchers his charges for such supplies?—That ought and could be done equally well by others—by purveyors or stewards.

2603. If the constituted department for the supply of food for the soldiers cannot find any, how is the medical officer to be expected to procure supplies under the circumstances?—Of course, if they cannot, how can he?

2604. Is it for the good of the public service that the medical officer should under any circumstances be held responsible for the custody of wine, beer, or spirituous liquors?—No, certainly not.

2605. (*President.*) He is limited by the regulations, he may only have a certain quantity in his possession?—I do not know what the quantity is: there is a quantity fixed at Aldershot, I believe; a bottle of wine, I think.

2606. (*Mr. Martin.*) It is your opinion that a

medical officer should not be held responsible for their custody?—I think he should not be made a store-keeper; he is a professional man.

2607. (*Dr. Andrew Smith.*) But has not every medical officer, treating patients in the hospital, the power in himself of varying the diet to any extent that he likes, giving fish or any other article that he thinks desirable; and if he thinks it necessary, by only putting the man on spoon diet?—If he puts a man on spoon diet he can give chops, soup, arrow-root, and fowls, but I never knew of fish being given.

2608. He is not prohibited from giving such, is he?—I am not aware that he is, but the man must be put on spoon diet.

2609. If a party of troops were sent from Quebec to a distant station about 200 miles, say two companies of a regiment, and there was a hospital with five or six sick in it, who would you propose should provide the supplies for the sick in that case, if the medical officer is to have nothing to do with dieting the sick?—I think that the hospital serjeant ought to do it, and take the part of steward of such a small hospital as that. If there is no purveyor the commissariat would give the usual things, and any extras should be bought by the steward or hospital serjeant.

2610. If there is no purveyor there and no commissariat, what would you do?—I should let the hospital serjeant or the steward purchase the articles required.

2611. Should he do this on his own responsibility, or would you hold the medical officer in any way responsible that the serjeant did not act unfairly to the public, there being no check upon him?—In the accounts the medical officer could certify that he believed those diets were issued to the men, the vouchers being attached to the expenditure account.

2612. (*President.*) Is that the practice of the service now?—At Templemore, in Ireland, when I was surgeon of the 60th Rifles, I was asked by the inspecting medical officer, whether I paid the tradesmen for the hospital accounts, and my answer was, that I paid them through the hospital serjeant, first having totalled them up, and seen that the accounts were correct. I was found fault with, and told that I must pay the money over to the tradesmen myself, and that he would report that I had not performed my duties as I ought, (not having paid the money myself to the tradesmen, with my own hands) and he did report it, because a letter came out to the Cape to my colonel, desiring him to call upon me to be more attentive in future in performing my duties according to the regulations.

2613. (*Mr. Martin.*) Do you consider it proper to the functions of a medical officer, that he should under any circumstances be held liable or responsible for matters of account connected with the dieting of the soldiers?—No; some one ought to be set apart for that special purpose, the medical officer attending to his professional duties.

2614. There are in fact other departments whose duty it ought to be?—Yes.

2615. (*President.*) In the case you have mentioned, in a regiment, with regard to the supplies to the sick, could not that be under the supervision of the quarter-master. Could not he do it for the hospitals as well?—He could do it; but I think if the hospital steward or serjeant were allowed to purchase them, the chances are, that we would get better articles than through the quarter-master, because we are allowed to give 1*d.* per lb. extra, by regulation, for meat.

2616. With regard to field hospitals, what is your opinion as to the manner in which the field hospitals should be organized for every battalion?—I think that every regimental field hospital should be rendered so far complete in transport as to carry a certain amount of bedding and stores for a certain period, and a division the same, and of course head quarters the same. The surgeon's signature, I conceive, ought to be perfectly sufficient for any stores that he requires to keep up his stock, and the medical officers in charge of the division the same for the division.

2617. Would you make the surgeon responsible for the stock being kept up?—Quite so.

2618. Not the purveyor?—He would draw from the divisional purveyor and apothecary or dispenser for his medicines and other articles, comforts, &c., to keep up if possible his regulated supply before marching.

2619. For other stores the purveyor would be responsible?—Yes; but he would not know what the surgeon really had on hand, unless you had a purveyor attached to the regiment.

2620. Would you have a purveyor attached to a division?—Yes; only separate transport must be given to the medical department, to have this carried out, and hold it responsible for the same.

2621. Would not the separate transport very much complicate the movement of an army?—I think it would simplify it, if it was laid down exactly what proportion of ambulances and transport the regimental surgeon was entitled to, to carry field equipments, and men sick or falling out the march. Also were certain transport and ambulances, so regulated and laid down for divisional supplies, on moving, instead of its being all hurry scurry, each regimental surgeon would get what he was entitled to, and the division the same. (*See Appendix No.* L.)

2622. (*Sir H. K. Storks.*) But the general officer commanding would have a certain proportion of transport assigned to him from the military train, and he could appropriate a portion of it for the hospital?—Yes; but if you are moving forward you will always find that the hospitals come off second best.

2623. If you want transport for carrying ammunition and things of that sort, you would naturally supply that first?—Yes; but if you laid it down that a certain amount of transport was to be provided, in addition for medical purposes, the general would have his own amount of transport generally, and so would the doctors; and it is only allowing more transport according to the strength of the army, and giving the extra allowance to the medical department for its particular use.

2624. (*President.*) As the general is head over all, if he found it necessary could not he carry off your horses?—Yes, certainly; but I think you would have a better chance of getting what you wanted were a certain amount laid down for the medical department.

2625.) (*Sir H. K. Storks.*) Was not this system adopted in the Crimea in the event of the army moving?—At first when we moved all that was given was a mule and panniers; then when we marched from Varna with great trouble, an araba was allowed to each regiment. When we landed in the Crimea we had nothing. Some surgeons were lucky enough to seize an araba, and they carried a few things, but they had no transport set apart.

2626. Were there no transport animals landed in the Crimea?—No, but there you seized them; the surgeons took possession of any araba that they found straying along the road. There was one instance in which one hospital serjeant seized upon an araba and put the panniers into it, when an officer, I was informed, came up and requested the serjeant to take them out, as it was required for the general staff. A short time afterwards officers' baggage was found in this same araba, the panniers of the hospital being left on the spot all night.

2627. (*President.*) In point of fact, whenever it was found that the general transport of the army was short of horses, and the medical transport were in possession of them, would they not lose their horses just in the same way?—Yes, they might; but if you laid down a certain quantity of transport for the medical department, you would give it in addition to the same amount of transport which you now do for the military.

2628. (*Sir H. K. Storks.*) But the transport must vary, must it not, according to the number of sick?

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—In the field you do not carry the sick with you; you send them generally back to the rear.

2629. You must have transport then, must you not?—Yes, certainly.

2630. (*President.*) You could not maintain, as your permanent stock of transport, a sufficient number of animals to carry back the wounded after a general action, otherwise they would be idle and useless in the intervals?—Yes; but a mule with panniers ought always to remain with the regiment, because you use them for carrying water, wood, &c.—the remainder with the military train—and obtained when requisite to carry sick or wounded to the rear, and bring back supplies for the hospitals.

2631. (*Sir H. K. Storks.*) You have been at the Cape, have you not?—Yes.

2632. Was not the transport very good there?—No. When I first went, nothing was given to a battalion but one mule and panniers; but I afterwards, by fighting, obtained a waggon for carrying hospital stores for my regiment, when we took the field.

2633. How did you send your sick back?—We put them into the commissariat waggons, as the food was consumed, and also carried them frequently on stretchers.

2634. (*President.*) What you would have is this, no more transport than was necessary for you to carry about your ordinary materiel?—Yes, and a certain amount of ambulances for men falling out on a march—sick or wounded—carriage for so many per cent., according to strength.

2635. But for sending the sick and wounded out of the field, you must always depend upon the general transport of the army, must you not?—In some measure; but you ought to have a certain number of ambulances, calculated at so many per thousand, in addition, and also for hospital stores.

2636. You say that the surgeon's signature ought to be sufficient for what he requires?—Yes.

2637. To whom does it go now?—It was required to go to the divisional medical officer, and in the Crimea to Sir John Hall, who was about 2 or 3 miles further off, and the divisional officer's signature was not sufficient to get the supplies from Balaclava; but a man had to go those three miles to Sir John Hall's quarters. He might be out of the way; but if not, he obtained his signature.

2638. With a number of those coming into him from different quarters, he could not know whether they were required or not, or, at all events, not such good means as the man who made the requisition?—He knew by the divisional officer approving of the requisition; but three signatures were required, instead of one.

2639. (*Mr. Stafford.*) How far off was the furthest medical officer whose requisitions you had to sign, before they went to Sir John Hall?—About three quarters of a mile or so.

2640. (*President.*) How would you deal with the requisitions?—I would consider the regimental surgeon's requisition sufficient for a regiment; and in the case of the medical officer in charge of the division, I should consider his signature also sufficient for the divisional supplies.

2641. (*Mr. Stafford.*) You would save a mile in one case?—Yes, and two or three to Sir John Hall, besides, when in the Crimea.

2642. You would save six miles in all?—Yes, and very often they got nothing, as often Dr. Hall was out of the way, and the man had to come back, but such might not occur again.

2643. (*Dr. Andrew Smith.*) With regard to transport, would there be no danger of some surgeons demanding more conveyance than was necessary, and others not enough?—If you laid down a certain quantity for a regiment, such as you conceived necessary, he could not get more than such regulated allowance on his signature.

2644. Suppose he did not want it all, what then? Say that you carry 12 or 20 sets of bedding, A and B canteens, marquee, some stretchers, an axe, spade, and hatchet, &c., those being regulated things; you will find that one cart will carry all those; then, in addition, some ambulance for weakly men on the march, and his pannier mule. If that were laid down, he could not get more; a good light cart and a pannier mule would carry what I have mentioned, besides extras, arrowroot, brandy, tea, and sugar, so that the surgeon would always have at hand some comforts for his sick and could establish a hospital at once when requisite.

2645. Would it not be better that the surgeons should send to the divisional medical officer at once and let him give a general return, and let that return go directly to the director-general of field stores?—No; the medical officer in charge of a division might be out of the way, or a sudden movement may have taken place, and they then could not get the transport without his signature.

2646. (*Mr. Martin.*) You are aware that the Intendance in the French service place everything at the disposal of the regimental medical officers, every thing that they require, including carriage?—Yes, to a certain extent.

2647. Would not an arrangement for the supply of the means of transport for regiments and divisions give another advantage besides, viz., that the transport cattle would be better cared for, it being the interest of both regiments and divisions to be careful of their own cattle?—Yes, of course.

2648. (*Dr. Andrew Smith.*) What was the system in the Crimea, was it not for the divisional surgeon to send to Sir John Hall; he approved of the requisition and it was then sent to the assistant quartermaster general, and from that officer it then was sent to the officer in charge of the land transport of the division?—Yes, at one time; and look how many signatures were required, and how many miles of ground they went over at times to obtain it.

2649. Would it not be better to send direct from the divisional medical officer for what was required by the medical officers of the division to the director-general of transport, and get it at once, instead of through the quartermaster-general, and through Sir John Hall?—I merely want it laid down in Her Majesty's regulations that the surgeon being entitled to one cart and one pannier mule, with some ambulance waggons, &c., on his regiment moving, he could send immediately to the officer in charge of transports, and get them at once.

2650. Are you aware that it has been proposed that a small cart shall be attached to each regiment, as a matter of course, and that it is only for the extra conveyance that it is necessary to make a requisition?—It was not done by general order in the Crimea that I am aware of.

2651. Latterly it was arranged that each regiment should have its own panniers, and that each regiment should have a cart for the medical officer to carry his medical chest, his bedding, and other things in; and if it turned out that there was too little supply for the regiment, whatever extra conveyance was wanted was to be obtained by the divisional medical officer sending to Sir John Hall, from him to the quartermaster-general, and from the latter to the director-general of the land transport corps, ordering him to supply the whole, or only to supply a portion?—I do not recollect that those things were done in April 1854, by general orders in the Crimea. I recommended that a battalion should be complete in itself, and in December 1854, that separate transport should be given to the medical department to complete regiments, divisions, &c., also that a hospital staff corps should be raised for orderlies, &c., and a field medical inspector appointed, who would be held responsible for all duties in the field regarding hospitals, camp, ambulances, &c. On the 21st Sept. 1855, six pairs of mule chairs or litters were given over to the land transport of each division to be at the disposal of the principal medical officer of the division.

2652. (*Mr. Stafford.*) When did you leave the Crimea?—My division had embarked before I left,

some time in June 1856. I was in charge of the light division from the first time that it took the field till it was broken up.

2653. (*President.*) You did not get those supplies to the end?—On 27th February 1856 Sir John Hall and the principal medical officers of divisions met at his hut and went over the matter, and tried to lay down the rule that I am now talking about, viz., what transport we ought to have. I stated then all the weights of the blankets and the bedding, &c. that a cart would carry, and what in my opinion we ought to have; but we never met again on the subject.

2654. You did not get the things?—We never took the field. I recommended this plan in December 1854 to Dr. Smith, besides other arrangements for the field. On 7th March 1856, some ambulances were divided among the divisions, and peace was signed on 30th March.

2655. (*Dr. A. Smith.*) Do you think it would be wise to entrust every surgeon of a regiment, or in the event of a surgeon being absent, every senior assistant surgeon, if he was present, or whoever the medical officer might be when a move is going to take place, with the power of making a demand upon the director general of land transport, or do you think it would not be better to let the divisional medical officer, or the deputy inspector of the division make it, after application had been made by a medical officer to him?—I think it would be better to let the surgeon demand his regulated allowance, and if anything extra was required, then the divisional principal medical officer might do it.

2656. (*President.*) You mean that he would not make that requirement unless it happened that he had been deprived of that which he was entitled to?—Yes, or he might have more sick to carry. If they had a regulated allowance laid down, then the medical officer's signature ought to be sufficient to the officer in charge of the transport for that amount.

2657. (*Dr. Andrew Smith.*) The military authorities were of opinion, that the requisition ought to go to the quartermaster-general. I was averse to that, as it would cause so much longer delay, and I proposed that the divisional medical officer should make a direct application to the transport service; was that the practice, so far as you know, towards the latter part of the campaign in the Crimea?—It had to go to the assistant quartermaster-general of the division, and then to the officer commanding the land transport until 6th September 1855, when it was ordered that requisitions for medical transport should be sent direct to the divisional transport officer after obtaining the signature of the principal medical officer of the division.

2658. (*Mr. Martin.*) I infer from your replies that you consider a regimental medical officer a competent and proper person to make such requisitions?—Decidedly so; I would place that confidence in him that he is entitled to.

2659. With reference to a division, and the check over requisitions and over the regimental surgeon, is it not in your experience that the inspectorial medical officers are very fond of checking and over checking?—Yes.

2660. In a vexatious manner sometimes?—Yes.

2661. (*President.*) When you say that you would trust the regimental surgeon, you would put upon him the responsibility from which he is now relieved, would you not?—He is not now irresponsible, because it is considered that he should look after the comforts of the sick.

2662. Still the responsibility would be much heavier on him if his requisition were taken?—Quite so.

2663. With regard to rations have you not expressed the opinion that the inspections over the regimental surgeons are too frequent and minute?—I think that the first-class staff surgeons going every Monday morning to inspect is not necessary; it causes a bad feeling, not placing sufficient confidence in the regimental medical officer; it is a sort of schoolboy affair. A surgeon, as I was told, marked a quart, and he was found fault with and told to write two pints. If his prescriptions are not written out in Latin in full he is found fault with. I think a regimental surgeon is a man of some considerable standing, and ought to be treated differently, and that there should be confidence placed in him; I have a very high opinion of regimental medical officers.

2664. You hold that the absence of confidence always creates a want of responsibility?—Yes, it annoys, and creates a bad feeling.

2665. (*Sir H. K. Storks.*) At those visits of the inspectors, or first-class staff surgeons, is the treatment of the patients looked into as well as the returns?—Occasionally.

2666. The inspector goes more to inspect the returns than to the treatment of patients?—I consider that inspectorial duties are necessary, but I would not have it laid down that they should go at a certain time, but that they should go in occasionally. I think that treating the medical officers as gentlemen, you would have all the duties done much better.

2667. (*Mr. Martin.*) In the Crimea did not the staff surgeons interfere, as you state, in the presence of the patients, so that the soldiers felt aggrieved at the interference?—I am not aware of that; not in the light division.

2668. (*President.*) A first-class staff surgeon is often junior to a regimental surgeon, is he not?—Yes, occasionally.

2669. Do you consider a first-class staff surgeon to be an administrative or an executive officer?—Generally speaking, he is considered an administrative officer, but also executive.

2670. Does he visit and prescribe?—I think if it was laid down that he was to be an executive officer in a military hospital, to take charge of so many wards, and the probationers and young officers walked round with him, and merely carried out his practice, you would make him a much more useful officer than he is now.

2671. Was not the rank created on a representation made by Mr. Guthrie, that there were not sufficient executive ranks in the army, and too many administrative in proportion?—I believe that was in the field, to look over brigades.

2672. It was originally intended to be an additional executive rank?—Yes.

2673. (*Dr. Andrew Smith.*) With reference to a former answer that you gave, are there not many medical officers in all places who do require strict supervision?—There are medical officers of that description, but I think you make them so because you do not place confidence in them; they become disgusted.

2674. There are a number of officers, are there not, that require to be looked after in the discharge of their duties?—Some men do their duties better than others, but I think that by the inquisitorial system of inspecting so repeatedly, you do not place in them that confidence which they are entitled to.

2675. Have you any evidence of that?—I know that regimental surgeons have frequently complained to me of that kind of treatment in others; it is too inquisitorial.

2676. If there are a certain proportion of medical officers that require to be looked after you cannot possibly make a distinction; you cannot say, here is a surgeon that I must go and look after, but this one I will pass by?—Say, for instance, that you did find a man that did not do his duty properly, it would be very easy for the inspector to go in occasionally: he need not go in each day, but he might walk in as often as he thought proper. I would not treat the majority in such a manner for the few who require it.

2677. Where is he required to go round each day?—He is required to go round once a week, I think at Aldershot.

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2678. (*Mr. Martin.*) And more frequently in the field, is he not?—Some do it every day.

2679. Do you think that in any case the staff-surgeon should prescribe over the regimental surgeon, and that in the presence of the patient?—No; I think it is a want of etiquette if he does so, because it lowers the regimental surgeon in the opinion of the soldier.

2680. (*President.*) That is, if he sees a necessity for correcting his treatment, it ought not to be done in the presence of the patient?—No, but he should take him aside and talk to him more in the way of a consultation.

2681. (*Dr. A. Smith.*) Did you know any staff-surgeons, of the first class, in the Crimea, who were juniors to the regimental surgeons there?—I do not recollect one exactly at this time. I inspected, at Malta and in Turkey, the 28th and 50th regimental hospitals. I think one surgeon had been about 40 years in the service when I was 20. I was first class then; the other surgeon was much longer also in the service than I was.

2682. (*Mr. Martin.*) The thing does happen frequently, does it not?—It does happen.

2683. (*President.*) Is not that the necessary result, if you count seniority by service instead of by rank?—Yes, quite so.

2684. The objection that you make is not that the regimental surgeon resents his being interfered with by a man his junior in the service, but that he is interfered with minutely on points on which he must be the best judge?—Yes, they do it frequently; it is a sort of inquisitorial school; it is too school-boy a proceeding.

2685. (*Dr. Andrew Smith.*) In what way does the staff-surgeon interfere with the regimental-surgeon?—The staff-surgeon goes round, and looks at the diet table, and sees whether it tallies with the register, whether a patient has had too many extras; he looks round the hospitals; and in the case of a regimental surgeon, of some standing, to look over him, and see whether a patient has been given too many extras during the week, is carrying it a little too far.

2686. Is it not frequently the case that the extras are too many?—Yes. It happened to me at Quebec that a first-class staff surgeon made his inspection every Monday morning; I am told that it is the rule regularly now at Aldershot to inspect once a week.

2687. (*Mr. Stafford.*) At question 1193 of the evidence taken before the Select Committee of the House of Commons on the medical department of the army, Dr. Mapleton stated "In the army medical department a surgeon can get an order from a staff surgeon of the first class, from a deputy inspector, or an inspector-general, as to the amount of food that he shall give the patient, as to the amount of medical comforts that he shall give to the patient, and as to the medicines that he shall prescribe for the patient. Now in private life that would not be tolerated; a man would consult in private life, and not be ordered." Do you agree with that?—He can get such an order, but it is not generally done, still it is open to be done, and in private life it would not be tolerated.

2688. You think that objectionable, do you not?—Yes, I do.

2689. (*Dr. Andrew Smith.*) Have you ever known it done in your experience?—Yes; I have myself been found fault with by the principal medical officer, who came round and inspected my books, because I had given too much wine.

2690. Was not that in conversation; he did not tell you that you had done wrong, did he?—It was done in this way. The first-class staff surgeon said to me one morning, "Mr. Alexander, I must examine into your books, you have given a large quantity of wine." I said, "It is too inquisitorial; I have given so and so. I conceived it necessary, and I will pay the amount, if you think it is too much, rather than you should examine into my books, for I think it is inquisitorial and lowering to me." The first-class staff surgeon said "I must obey my orders," He looked into the books, and after a most minute examination found all the cases registered, and that the diets and extras tallied with the diet table. My assistant-surgeon was present at the time. I remember another case. The inspector-general sent down a memorandum to me at Quebec, that he would at his inspection inquire into the wasteful and extraordinary expenditure of the reserve battalion hospital of the rifle brigade; having totalled up the number of sick, and found the expense of dieting some patients 6*d.*, others, 10*d.*, and others, 1*s.*; mine happened to be 10*d.*; he did not take into consideration for one moment whether these were cases requiring extras or otherwise, but as mine cost 10*d.*, having had a great deal of typhus fever, requiring wine and extras, he issued a memorandum that went through the whole of Canada, calling attention to the extravagant way in which several hospitals were conducted, and remarked that those officers whose patients cost 10*d.* or a 1*s.* either did not understand their duty, or did not attend to it.

2691. Are you aware that those points are exacted in consequence of the exactions made by the War Office upon the medical department, and not in consequence of it being the opinion of the head of the medical department, and the administrative officers serving under him?—No, I am not aware of that. I reported the above home to Sir James Macgregor, and demanded that there should be a stringent inquiry into the same, and that the whole matter should be laid before His Grace the Duke of Wellington, and the answer I received was, that it was better for the service that nothing more should be done in the matter.

2692. (*Mr. Martin.*) In your opinion, supervising the duties of a hospital should be so conducted as to be effective in respect to certain officers, and merely an apparent supervision over the best class officers, and be done in a delicate manner?—Yes, in a gentlemanly manner, dictated by good taste and a knowledge of human nature.

2693. (*Sir H. K. Storks.*) Are there any written instructions issued to the inspecting medical officer?—No published ones unless inspection returns to be filled up, and paragraph 8, page 286, Queen's regulations.

2694. (*Dr. Andrew Smith.*) Does not every principal medical officer on being appointed to a foreign station at the same time receive additional orders to what his predecessor had, and if he does not, he is referred, is he not, to the orders of his predecessor, which are written?—They are written, not published.

2695. (*Mr. Martin.*) Should not this supervision be made a matter of rule in the service, so as to be understood by all classes of officers?—I think so; it ought to be clearly laid down in the printed regulation for medical officers.

2696. And made a matter of rule and regulation?—Yes.

2697. (*Sir H. K. Storks.*) What has the medical officer to guide him on the line of inspection that he is to take?—He has the written instructions of his predecessor, with the forms of inspection; they are not all printed or published.

2698. Written things may be printed, may they not?—Yes, but they are not all published and printed.

2699. (*Dr. Andrew Smith.*) They are not printed, but they are published?—I mean published in the printed book of regulations for hospitals. Unless they are published there the other officers cannot know them.

2700. (*Sir H. K. Storks.*) It is not a departmental order that is issued?—No; it is not published in the regulation book.

2701. Then it is not published?—No, not that I am aware of.

2702. (*Mr. Martin.*) All the parties concerned do not know it?—No; the letters are kept in the office.

2703. (*President.*) It is an instruction to inspect which is not communicated to the inspected ?—Quite so. I think that everything regarding the regulations of the service ought to be clearly and distinctly laid down in the published book of instructions.

2704. Is it customary for the army medical officers to be consulted as to sites for camps and hospitals ?—No, not customary; I do not know about Netley, but I am speaking generally.

2705. Would they be consulted as to sanitary measures for occupying towns ?—No, not necessarily.

2706. Or as to the sanitary state of barracks and general matters affecting the health of the troops ?—No, not generally speaking. In my opinion medical officers ought invariably to be consulted about sites for hospitals, barracks, drainage, sewerage, construction, ventilation, and the space allowed to each soldier or patient; also the ground for camps; for strategetical purposes certain camps may be necessary. No medical officer would take then upon him to interfere. Still with his sanitary knowledge he could render them much more healthy, by drainage, &c. If permanent the refuse should be burned instead of burying; it would not do to bury if you remained long on the same ground. You must burn all the refuse, otherwise the water and ground would become impregnated, and the site unhealthy.

2707. Is it the duty of a medical officer, whether assistant or not, to make representations to the commanding officer ?—I think it is, and that he ought to do so.

2708. With a view to his recommendations being carried out, would you make any regulation that he should make such representation in writing ?—It would be better in writing, for then it could be produced afterwards. A great many things are done by conversation. You see the general of your division, and say, such and such a thing ought to be done, and he may act with you or not, as he thinks proper.

2709. If a regulation enacted that the commanding officer should consult the medical man, it might be evaded by his consulting him and then paying no attention to his advice ?—Yes, he may laugh at you, unless you place the same in writing; and, should sickness break out, hold him responsible for not following the suggestions of the medical officer.

2710. But if by regulation the medical officer was obliged to give his opinion in writing, it would then stand as a record in case neglect of his advice led to evil consequences ?—Yes, quite so; therefore it ought to be written. When I made requisitions about having stores with me at Aladyn, I applied officially to the general commanding in the field, which went to the general of the division, and the answer that came back was that I had better keep my suggestions and strictures until they were asked for.

2711. What were the subjects that were generally included in the representations which you made ?—I often represented about the food, the drills, clothing, fuel, and that hospitals and kitchens ought to be built, and men set apart to cook; the sanitary arrangements of the camp; that the cleaning of it should be attended to, and the burying of dead animals. I have also represented about the rations, and everything connected with military hygiene. I think it is the duty of the medical officer to point out his opinions connected with sanitary measures to the officer commanding.

2712. (*Mr. Stafford.*) Were your suggestions generally listened to ?—Not always. Eventually they listened to them more than they did at first; but it does not follow that the suggestions of any medical officer are listened to or carried out until the consequences are seen, and then they begin to place more confidence in the opinions of the medical officer.

2713. You think that in all cases no important steps ought to be taken upon which a medical opinion is advisable, before the medical officer has been consulted?—He ought to be consulted invariably on every subject connected with the health of the troops.

2714. With regard to rations ?—Yes, with regard to rations and clothing, and accommodation, the space allowed to each individual, either in hospital or in the barracks; such is not done now. The ordnance department tell off a ward to hold so many patients, or the barrack to hold so many soldiers; the medical men are not consulted on those matters.

2715. You consider that it is the barrack department which settles virtually how many patients should be included in a ward ?—They paint it up on the hospital or barrack doors.

2716. Do you consider that the hospitals and barracks are sufficiently ventilated or spacious enough ?—No, far from it. There are few hospitals or barracks that I have seen ventilated, save by doors and windows, which, being under the power of the soldiers, I consider as no ventilation whatever.

2717. You think there ought to be artificial ventialtion ?—Yes, it ought to be carried on in such a way that all went on quite independently of the soldier, and he ought not to have the power of checking or stopping it. And with regard to the site, drainage, sewerage, ventilation, construction, the space allowed, and sanitary arrangements, on all these subjects the medical officer ought to be consulted invariably.

2718. With regard to the ration, have you formed any opinion as to the quality and amount of the ration, and its sufficiency to keep a man in good health ?—I think that the present ration, as laid down by the government, is not sufficient to keep a man in perfect health and fit for his duty, and that the government ought to lay down a ration that should be sufficient to keep a soldier in health. You ought not to allow the soldier to have it in his power to purchase this or that, but the government should supply him with vegetables, tea, and sugar, in fact with every requisite to keep him fit for his duties. When you go to the field, you are trusting to the man buying what is *bonâ fide* necessary to keep him in health, and when his services are required he breaks down, because he cannot obtain what is absolutely necessary to enable him to perform his duties.

2719. (*Sir H. K. Storks.*) You know what he gets at home ?—Yes.

2720. Do you consider that sufficient for the soldier to keep him in health ?—The dieting depends entirely upon the work he is called upon to perform, his exposure and his clothing, and ought to be laid down and varied accordingly.

2721. Take the ordinary work that a man performs, and night exposure, do you think the quantity of food that he gets according to the regulations, sufficient to keep him in health ?—No, I think that the ration should be laid down of a sufficient quantity to keep the man in perfect health, and that whatever is requisite should be issued to him as a ration by the government.

2722. (*President.*) Sufficient to give him three meals a day, with such a variety as to counteract the effect of a diet too exclusively meat and bread ?—Yes.

2723. Would you introduce a variety of diet, in order to keep him in health, on other grounds ?—I would. I would, on salt meat days, issue some peas meal, in lieu of a portion of the pork; and when beef is issued, flour, raisins, and suet, in lieu of a portion of beef. I should bring it, as nearly as possible, to the ration of the navy on those occasions, and have kitchens for roasting, baking, &c.

2724. At present the quantity he gets must depend upon the price of the market at the time ?—Yes.

2725. When things are dear he gets less, and when things are cheap he gets more ?—Yes, according to the prices of the market.

2726. The stoppage is fixed, but the amount of ration varies with the price in the market ?—Yes.

2727. When the prices are low he gets too much, and when they are high he gets too little ?—Yes. Besides, the soldier must be fed so as to keep him in health. A man in the Crimea required more, being at first badly clothed and housed, than a man in England would, besides the difference in the qualities of the provisions.

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2728. (*Mr. Martin.*) Are you aware that the Crimean Commissioners recommended an increased scale of diet?—Yes.

2729. Twenty-four ounces of soft bread, 16 ounces of fresh meat, eight ounces of fresh vegetables, two ounces of rice or barley, one ounce of coffee roasted or ground, and two ounces of sugar, one eighth of a pint of spirits, half ounce mustard, quarter ounce pepper, and half ounce salt. Do you approve of that ration for field service?—I do. At Aladyn, in Bulgaria, in June 1854, I mentioned to the general officer that the soldier could not perform his duty, unless he was better fed, and that the then ration was not sufficient. So much so, that I wrote officially to the general commanding, on 27th July 1854, while at Monaster, and recommended that half a pound additional of meat should be included in the daily ration, so that good soup, with rice, pepper and salt, should be had by the men, the meat being of an inferior quality, which ½ lb. was given to the whole army.

2730. Have not increased rations been often demanded more in consequence of the defective cooking of the soldier than as a mere matter of weight, so much being wasted?—Yes, the cooking is very defective. At the same time you require a certain weight to contain the nourishment requisite to keep a man in health, and to enable him to perform his duty.

2731. (*Mr. Stafford.*) Do you think that the soldier should have had as much or more animal food in those climates than in this?—They required more in consequence of the labour which they had to undergo, and the bad quality of the provisions. At the Cape every man consumed easily his pound and a half of meat a day in the field.

2732. (*President.*) In a cold climate the men require a larger amount of animal food, do they not, than in a hot climate?—Yes.

2733. (*Mr. Martin.*) Assuming that the last mentioned ration of the Crimean Commissioners should be received as the standard ration for active service, do you agree with them that a certain equivalent may occasionally be substituted for some of the articles; for example, 16 ounces of biscuit for 24 ounces of soft bread, two ounces of compressed or preserved vegetables for eight ounces of fresh vegetables, and one-third of an ounce of tea for one ounce of coffee?—Yes, that would save your transport. You cannot always have fresh vegetables and you cannot always have fresh bread, so you must have biscuit and preserved vegetables in lieu of them.

2734. Are not mixed diets in all countries found to be best suited, and should not military officers see daily to the freshness and purity of the vegetable and animal diet?—Certainly.

2735. Should not care be taken that the vessels employed in cooking and carrying water be kept in a state of great cleanliness, and should they not be under the supervision of some orderly officer?—Certainly.

2736. Does it appear to you, that a natural order of diet could be fixed and established thus: one scale for the soldier in barracks or cantonments, and another and higher scale for field service?—I think so. I conceive that it is absolutely necessary to issue in the field more than in cantonments, they having more work to do consequently require more food.

2737. Is it not very desirable that the labour value of the several diets should also be observed?—Quite so. You may lay down exactly what is requisite to keep a man in health, according to the proportion of the labour he has to perform. Then cooking is too little attended to, and ought to be much improved.

2738. Should there not be in every regiment two practised cooks to teach the young soldier?—Yes, there ought; and cooks should be set apart especially for that purpose.

2739. Referring to your answer in which you stated, that it is the duty of the medical officer to state his opinions to his commanding officer upon all sanitary questions, do commanding officers generally apprehend and acknowledge this obligation and duty on the part of the surgeon?—They are not fond of it, and they do not act upon it very often.

2740. Is it not the practice in the service?—They do not consider that they are bound to carry out what the surgeon or medical officer recommends.

2741. (*President.*) Has it ever occurred to you that in issuing salt meat for the army, salted as it is for the navy, you might issue corned meat which would be far more wholesome?—Yes, it would be far more wholesome and preferable.

2742. You do not require for army purposes to keep it as long as you do in the navy?—No, it would be better if it were salted less.

2743. Slightly salted meat would answer all the purposes for the army?—Yes.

2744. Do you prefer malt liquor or spirits as a ration?—Malt liquor.

2745. But it is not portable enough?—No, that is the difficulty.

2746. Take the case on board ship, they issue a dram to a man, do they not?—I think that the spirit ration on board ship is a bad principle, because in a long voyage you thereby engender such tastes in a young soldier that he may eventually become a confirmed drunkard.

2747. Do you consider that it is necessary for his health on board ship?—No.

2748. Is it more necessary on board ship than on land that he should have a dram?—No, I do not think so.

2749. You would abolish the spirit ration on board ship?—I would.

2750. Are there not a great multiplicity of stoppages at present for rations and food in the army?—There are a variety of stoppages made. A man is charged in the hospital so much; if he is wounded, he is charged so much less; if he is on board ship, he is charged so much; and if he takes spirits on board ship, he is charged so much more.

2751. Suppose you adopted a plan by which you supplied a complete ration, equal to providing a man with three meals, which would keep him in perfect health, would you make one uniform stoppage under all circumstances, except in hospital and at home?—Yes; I think that the government would save greatly by doing away with an immense deal of clerks' work in looking over these rations, were a fixed price laid down for rations on all occasions, in or out of hospitals.

2752. Was this the course of the stoppages at the commencement of the war, that the men left England being on 4½*d.*, and that they then had 5*d.* on board?—Sixpence if they took spirits.

2753. Then 3½*d.* when they arrived at Bulgaria, and it was subsequently raised by Lord Raglan in order to give them other supplies, and then they fell back on the original sum?—Yes; I believe so.

2754. Did it come under your cognizance that that led to great confusion in the accounts?—Yes; I have heard so.

2755. Ultimately the men were very much dissatisfied with the rough settlement which it was necessary to make with them?—I have heard so.

2756. You say that the ration could be improved in variety; can you improve the ration materially without improving the cooking?—Both are requisite; the cooking ought to have far more attention paid to it.

2757. If you could introduce different modes of cooking, you would get variety with the same material?—Yes.

2758. That is possible, is it not, in barracks and in hospitals?—Yes; by improving the kitchens.

2759. Is it possible in the field?—In the field I think that Soyer's camp-cooking stoves would be most valuable, more particularly if you are going through a country where fuel is scarce, because one or two men in a company could cook for a whole company, or a few men for a whole battalion, by placing the stoves in a row. In the Crimea a few men latterly

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did the whole cooking for a regiment with Soyer's stoves.

2760. Are Soyer's stoves more portable than the coppers ?—Yes, a mule carries the whole. It would have been invaluable at the Cape, we had sometimes to burn cowdung for want of fuel ; with those stoves you carry portable fuel to a certain amount on one mule with them.

2761. In a regimental hospital at home, could you introduce the means of giving a variety of cooking ? —Quite so ; I think that the kitchen ranges should be so adapted, that you could vary the food by roasting, baking, or stewing, so as to vary the diets occasionally.

2762. At present, every man in the camp cooks for himself, does he not ?—They cook by companies or in squads, but frequently for themselves.

2763. (*Mr. Stafford.*) They take it by turns ?—Yes, I believe so.

2764. (*President.*) Have you any suggestions to make with regard to the tents ?—I think that tents ought invariably to be carried in certain proportions, for one or two nights lying down in the cold might render many men quite hors de combat.

2765. Would you prefer the French tentes d'abri ?—No, unless for rapid marches ; I think that our bell tent is better ; the Turkish material is better, and not so likely to shrink ; their tent has a broader base and is not so high.

2766. (*Mr. Stafford.*) Does it turn the wet as well ?—Yes, I believe so. As a proof of that, by having a broader base, an immense number of those tents in the storm of the 14th November 1854 stood while ours were blown down.

2767. Is there not a great waste of space inside from the slanting sides ?—I do not think so ; they have a broader base.

2768. For some distance from the base they are so low that a man cannot get into them, can he ?—I do not think so. It is less liable to be overthrown, and I think that the curtain walls are rather deeper than ours.

2769. For hospital tents what do you recommend ? —Tents will never do for hospitals ; marquees are the best.

2770. (*Sir H. K. Storks.*) Is the regulation hospital marquee good ?—Very good indeed for field-work.

2771. (*Mr. Martin.*) But the bell tents are the worst, you think ?—Nothing could be worse for sick men than a bell tent.

2772. (*Dr. Andrew Smith.*) Do you think that the common bell tent single is calculated to maintain a man in health, does not the rain get through it ?—When it is worn a little it does ; but if you were to double it you could not carry it any distance inland, you would require such an amount of transport.

2773. (*President.*) Have you any suggestion to make on the subject of clothing ?—It should be varied according to the station or climate that the soldier goes to. The clothing now is made of a much better material, and the tunic is far preferable to the old coatee.

2774. And much less tight ?—Yes ; but it is too tight now, and in consequence the men throw open their coats, and then they get chilled. Flannel shirts are, I think, far better than the shirts which they now use. I would make the soldier wear flannel continually. I would have no stock. I have seen the men drop down with the heat ; it ought not to be like a hoop of iron, but it ought to be soft leather if worn. When the 60th regiment were marching into King William's Town, in Kaffraria, across the race course on a broiling hot day, the men were ordered to put on their stocks, and many fell down before they went many yards. I would have the collar of the tunic so fitted as to require no stock.

2775. Have you any suggestion to make with regard to the head-dress ?—I think the shako far too heavy, and it is uncomfortable for the field ; so much so, that the men invariably throw them away.

2776. (*Sir H. K. Storks.*) Do not you think that the forage cap is a very bad one ?—I do not think that it covers the head sufficiently.

2777. There is no protection for the eyes ?—No, and no protection to the back of the head ; there is great room for improvement in the head dress.

2778. (*President.*) Would you give them a peak or not ?—I have heard officers state that the men preferred them without the peak. The French peak is far preferable to ours, and shades the soldier much better. I much prefer it.

2779. (*Dr. Andrew Smith.*) Do you think that the flannel shirt by itself is always to be preferred ?—Yes.

2780. Would you make it the only shirt to be worn, and get rid of the cotton one ?—Yes. You will find that in the field both officers and men prefer it. I do not see why flannel could not be washed as well as any other material, and always worn.

2781. (*Mr. Martin.*) Do you think it of very great importance, that the purity of the water used for cooking and other purposes should be attended to by the commanding officer ?—Yes, it ought certainly to be covered and protected, and we did that eventually in the Crimea. It was so muddied, that we had to build around the stream from which it came to the tank.

2782. You consider that no labour or expense should be spared to secure its purity ?—None.

2783. And in standing camps and cantonments, it should be conveyed by iron tubes ?—Yes, by tubes of some sort ; if you could get iron, so much the better.

2784. And that from a source remote from contamination ?—Yes.

2785. What quantity of water should you consider necessary for the daily use of the soldier, including his own purposes and the barrack attendants ?—From eight to ten gallons would be sufficient for all purposes for a soldier, cooking, ablution, &c.

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2786. (*President.*) You are surgeon major of the Grenadier Guards ?—Yes.

2787. How long have you served ?—For 32 years.

2788. Have you served in the line as well as in the Guards ?—Yes, in the 43d and in the 18th regiments.

2789. Have you served abroad ?—Yes, at Gibraltar, in Portugal, and in Canada.

2790. Were you with the Guards in Portugal ?—No, I was in the 43d.

2791. Were you with the Guards in Canada ?—Yes.

2792. Therefore you have seen a good deal of the duties of a medical officer at home and abroad, and you know the difference between the practice in the line and in the Guards ?—Yes, I do.

2793. (*Mr. Stafford.*) Were you in the Crimea ?—No.

2794. (*President.*) Do the medical officers of the Guards pass any examination upon entry ?—They do.

2795. Is that a distinct examination from the one in the line ?—No, it is the same as in the army medical department.

2796. Do you think that examination is best made within the department, or would you prefer seeing it made by a body of examiners unconnected with the army ?—I should like to see it made by a body unconnected with the army altogether, the same as is done now in the civil service and in the East India Company's service.

2797. And in the army also, I think ?—I mean the East Indian army.

2798. Why do you think that is the better plan ?—I think the examiners ought to be lecturers, who

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are more competent, in my opinion, for this duty than persons unaccustomed to teach.

2799. You mean men who have been habitually examiners?—Yes, such as at the London University; there is a faculty of medicine there, and they might be examined in every branch of the profession by regular examiners.

2800. Do you think it is of service to exact from a candidate a diploma of medical as well as of his surgical knowledge?—Not exactly. I think either the one or the other should be insisted upon, but it would be much better to have them both.

2801. At present you require a diploma from the College of Surgeons, but not a medical diploma?—I believe not.

2802. Is not the greater amount of cases which are treated in the army, medical rather than surgical?—By far the most.

2803. In point of fact army surgeons are general practitioners?—Yes.

2804. Do you think it is advisable to require upon the first examination for admission any knowledge of military hygiene?—No. I should think they would acquire that better afterwards if there was any large military hospital, such as Chatham or the proposed new establishment at Netley, where it could be systematically taught.

2805. You do not attach much importance to the two chairs of military surgery at Edinburgh and Dublin?—No, I do not; I think the instruction would be better given in an army hospital than there.

2806. You would like to transfer those chairs to the army hospital?—I should think so; there are many men in the service perfectly equal to that duty.

2807. Would it, in your opinion, be advisable to have any second examination of army medical officers after they have been assistant-surgeons in the service?—I should think it would be advantageous, and it was done at one time. I was examined myself.

2808. Why was it discontinued?—I do not know that it is. When I was in Gibraltar the whole of us were examined.

2809. Did that create any dissatisfaction?—They did not like it, certainly.

2810. Does anybody like an examination?—I do not know that they do. We did not think we were so much the better for it after it was over. There is one thing I may mention, that the principal medical officer at Gibraltar was considered rather a tight hand.

2811. (*Mr. Martin.*) Was that examination preliminary to promotion?—No; it was an order that came out, that all medical officers were to be examined periodically.

2812. (*Sir H. K. Storks.*) In what year was that?—It was in the year 1826.

2813. (*President.*) The examination, I presume, was conducted by some officers on the station?—In the garrison Dr. Hennen was the inspector, and there was Mr. Hill, a staff surgeon, and the senior regimental surgeon, Mr. Macleod, of the 42nd.

2814. As the examination was conducted by officers on the stations in all parts of the world, there was no security that the examination did not differ very much in one place and in another?—No.

2815. Would not that be in itself a cause of dissatisfaction?—It might be so.

2816. It would be a cause of dissatisfaction, would it not?—It would.

2817. (*Mr. Alexander.*) That was while you were an assistant-surgeon?—Yes.

2818. You did not undergo a second examination?—No. They were to be periodical; they have been so since, as far as I know, but the order came out then.

2819. (*President.*) In the Guards I believe you have a different system of keeping accounts from that which prevails in the line?—Yes, we provide all our own diets.

2820. Will you explain your system? Do you, as medical officer, keep the accounts?—No, I have nothing to do with them.

2821. Who has to do with them?—The person who has most to do with them is the hospital steward and the quarter-master, who is also acting paymaster; they are the people who look after the accounts.

2822. Who provides for the hospital?—The hospital steward and the quarter-master.

2823. Who makes the contracts?—The commanding officer, and it is done by tender.

2824. The hospital steward, I presume, brings to him the contract that he proposes to make?—The quarter-master does so.

2825. You have had nothing to do with the accounts?—No.

2826. Are the diet-rolls made out in the same way in the Guards as in the line?—In much the same way in the Guards as in the line.

2827. Do you make the nominal diet-roll every day?—No, the steward does that.

2828. Does he make a fresh nominal roll every day?—No, it is carried on for a week.

2829. Who is the steward?—He was a serjeant; an old pay-serjeant when we got him.

2830. (*Dr. A. Smith.*) He is not a hospital serjeant, is he?—Yes, he is; he is called hospital steward.

2831. (*Mr. Martin.*) Is he under the purveyor or the commissary?—There is no purveyor or commissary.

2832. (*President.*) He is the hospital steward, and combines the duties of hospital serjeant and purveyor?—Yes.

2833. (*Mr. Stafford.*) In speaking of the hospital of the Grenadier Guards, do you speak also of the Fusiliers and Coldstreams?—Yes, the whole three; they are very much the same.

2834. (*President.*) This system relieves, does it not, the medical officer from a great deal of writing and accounts which are required in the line?—Yes, it does.

2835. And leaves you more time for your other duties?—Yes.

2836. Are there any disadvantages arising from that system?—Not that I am aware of; I have been now 25 years in the brigade, and I have never known of any.

2837. Does the steward supply everything that you order?—Yes, everything that I order.

2838. Without question or difficulty?—Yes.

2839. (*Mr. Stafford.*) Practically there is no limit as to your diet?—There is a regular hospital diet, but we can give what extras we please, as extras; there is a diet that is not given in any other branches of the army—a fish diet, which we find extremely useful in many cases.

2840. Practically there is no limit?—No limit whatever.

2841. You have never got into any difficulty by ordering that diet?—No; I never knew a medical officer get into a difficulty since I have been in the brigade.

2842. (*Dr. A. Smith.*) Who pays for the diet?—It is paid by the regiment, I believe, from the allowance which is granted to defray the recruiting and hospital expenses.

2843. (*President.*) Is there not an allowance of so much per man for the expenses of hospital and recruiting?—Yes.

2844. What check is there upon the steward?—The only check as to the diets is my inspection of the diet-rolls; the accounts are received every week, and entered in a book kept by the paymaster.

2845. You sign the diet-roll, do you not?—No, I examine the book. This is a copy of the weekly diet-roll (*handing in the same*), and this is a copy of the weekly account (*handing in the same*).

2846. (*Mr. Martin.*) The paymaster is the auditor, and he audits at the end of every seven days?—Yes, and at the end of every month there is a board of officers, and they audit the monthly accounts.

2847. (*President.*) Has there been an instance of peculation or defalcation?—No, I have never detected

one ; the only case of irregularity that I have ever heard of was in the case of a man who was found to have taken a per-centage from a tradesman, but it was I suppose more the tradesman's fault than the man's.

2848. Do you know at all what the expense of your hospital is per man ?—No.

2849. You do not know the cost of your diet per day ?—No.

2850. Is it more expensive than in the line hospitals ?—I should think it is, rather; there is probably more variety of diet, and the servants are better paid.

2851. Your non-commissioned officers are rather of a superior class in the Guards, are they not ?—They are generally, those that get up to that rank.

2852. Take the case of the line ; do you think that you could get in the line non-commissioned officers who could execute those duties as well as in the Guards ?—Yes.

2853. You do not think it is on account of the advantage you have in getting non-commissioned officers of a higher class that you are enabled to carry this system into effect ?—No ; I think there are as good non-commissioned officers in the line as there are in the Guards.

2854. (*Mr. Stafford.*) Have you read the evidence of John Jackson, given before a committee of the House of Commons of last year ?—I have.

2855. Do you agree generally with that ?—Perfectly ; the man was 15 years under my own eye.

2856. (*Mr. Martin.*) Have you not a larger proportion of non-commissioned officers in the battalions of the Foot Guards than in the regiments of the line ?—No, I am not aware that we have.

2857. (*Sir H. K. Storks.*) Have you four serjeants and a colour serjeant to each company ?—Yes, I believe so.

2858. (*President.*) What do you give to your hospital-serjeant ?—He gets 13*s.* a week.

2859. What is that in the way of addition to his pay in the ranks ?—It is not two shillings a day.

2860. In the line they only give 4*d.* a day additional ?—It is increased, I think.

2861. If a hospital-serjeant in the line received as large pay as your hospital-serjeant does, you think from your knowledge of the army that they can get as good men ?—Yes, I think so.

2862. In your opinion the situation of a hospital-serjeant is a very important one ?—Yes.

2863. What should you say was its importance relatively to the staff-serjeant ?—I should say that it ought to be made equal to it.

2864. And he ought to bo paid as well ?—Yes ; the hospital serjeant's pay is lower.

2865. (*Mr. Stafford.*) Are there any advantages to counterbalance that lower pay ?—Not that I am aware of; he has a small room to himself in the hospital.

2866. (*Sir H. K. Storks.*) Besides that, his duties are not of that fatiguing and responsiblo nature ?—No.

2867. Do you consider that the duties of the hospital-serjeant are of as responsible and laborious a nature as those of the serjeant-major and quarter-master serjeant ?—I should say that they are probably not so laborious.

2868. Are they as responsible ?—Yes, I certainly think so.

2869. You are thoroughly acquainted with the duties of the serjeant-major and the quarter-master ?—Yes ; I have known them for a good many years.

2870. (*Mr. Stafford.*) What number of orderlies do you have ?—We have generally probably one to every 10 men or 12 men.

2871. Are they taken away at the pleasure of the commanding officer, or are they permanent ?—Permanent I should say; I never knew one taken away.

2872. (*President.*) You have a non-commissioned officer to compound and dispense medicines ?—Yes.

2873. Do you agree with the statement made by Mr. Jackson on that subject ?—Yes, I do.

2874. It answered well ?—We have always found it do so.

2875. Have you any difficulty in finding a suitable person for that post when it becomes vacant ?—No.

2876. Do you keep a second in training ?—Yes, we do.

2877. Is the permanent non-commissioned officer allowed extra pay for that ?—He is allowed hospital pay ; he gets 5*s.* a week.

2878. Would it be advantageous to relieve the medical officer from irksome duties, such as dispensing medicines ?—Yes, I think so.

2879. Do you think that duty so important that it ought to be performed by a medical officer ?—No ; I always found we got on very well, and often better.

2880. Where there is a good deal of sickness prevalent, a medical officer in the line does not dispense medicines ?—I am not aware; when I was in it we never did ; the serjeant always did it.

2881. (*Mr. Martin.*) Had you nothing to do with the compounding and dispensing medicines during your service in the line and in the Guards ?—I ought to have had in the line, because it was the order, but I had not, but I was the responsible person.

2882. You consider it desirable that the medical officer should be relieved from such duties ?—Most decidedly.

2883. (*President.*) It has been stated that much time is consumed in the line in entering every disease in the register ; is that the practice in the Guards ?—No, it is not.

2884. Then what record have you of the disease of each man who is admitted ?—We have a medical register of cases of any interest, but a great number of them it is not necessary to put into the register. We have a record book in which we keep them, of which I have a copy here (*producing the same, see Appendix No.* LXXIV.)

2885. (*Mr. Alexander.*) Is that a kind of admission and discharge book ?—No.

2886. (*President.*) Have you got one book in which you merely enter the admission and discharge, and nature of the disease with which a man comes in ?—Yes, that is a different book altogether.

2887. Then in your record you enter cases which are considered important ?—Every time that a man is admitted into the hospital his admission is entered in the record book.

2888. Do you enter opposite to a man's name his promotion, and every time he has been in prison ?—Yes.

2889. What is the object of that ?—Because, when a man is discharged, it is necessary to state what the cause of his disability is.

2890. Who executes that duty of entering promotions and imprisonments ?—We have that from the orderly room. We send to the orderly room and get it put in there.

2891. In this document I see that there is nothing but tho simple entry of a man's name, and the nature of his disease, but no medical observation at all ?—None at all. We have tho case in the medical register, if it is a case of interest.

2892. Ordinary cases you do not enter in it ?—No, we do not.

2893. Does that register in which you enter tho interesting cases, become of any use afterwards ?—Yes, we have often to refer to it before we can dischargo a man.

2894. Is it useful for medical and scientific purposes ?—I should think not.

2895. Why not ?—Because the cases are not of much interest.

2896. Upon foreign service would that be the case ?—I do not exactly see how it could be useful in that way.

2897. For the purpose of the discharge of your men the record book is considered sufficient ?—Yes, it is.

G. Brown, Esq.

25th May 1857.

2898. You derive advantage, I suppose, in judging of a man's disability, from knowing what his habits have been, as shown by the defaulter's book?—Yes, it is of very great assistance in filling up the discharge paper, because we can state at once how far a man's irregularities have had to do with his disabilities.

2899. Does not this record book involve additional writing?—Yes, it does, but not much.

2900. It is not done by you?—No, it is not.

2901. Everything is done by the serjeant?—Yes, or some one else; he will get probably some one else to do it.

2902. (*Mr. Stafford.*) Who is the somebody else?—He will probably get a non-commissioned officer to do it.

2903. (*Sir H. K. Storks.*) Or an orderly clerk?—They have generally too much to do.

2904. (*President.*) It is filled up in the orderly room, is it not?—It is all extracted from the defaulter's book.

2905. You have paid some attention to the forms of the returns, and to the classification of diseases, are you satisfied with the arrangements, or are they capable of being improved?—I should say that they are capable of being improved. I should prefer the registrar-general's classification.

2906. For what reason?—Because I think it is more simple, and it is the same as is done all over England now.

2907. The nomenclature was adopted at the Brussels conference, was it not?—I am not aware, but I think it would be far better to assimilate the military with the other returns of causes of death, because they are the same in both.

2908. (*Mr. Martin.*) Within the United Kingdom the causes of death are the same in both?—Yes. But in the registrar-general's returns they also put in yellow fever and such diseases.

2909. (*President.*) Is it important for a system of general registration that the deaths of all persons should be recorded, and that it should not be confined to persons in civil life, and those who die in England?—I think it would be an improvement.

2910. If you could communicate the result of military medical statistics to the registrar-general, it would be desirable?—Yes, I should think so.

2911. There is no term in the army nomenclature corresponding to that of alcoholismus?—No; but there is a great deal of the disease.

2912. And it goes down under other heads?—Yes, very often.

2913. (*Mr. Martin.*) You appear to have fewer returns in the Guards, as compared with the regiments of the line?—Yes, we have.

2914. Does it fall within your recollection that the medical officers of the line have been overlaid with the preparation of returns?—Yes, it used occasionally to happen, but not so much now as it used to be; they used to complain that it was a very troublesome thing.

2915. (*Mr. Alexander.*) They could be simplified and condensed, could they not?—I should think so.

2916. (*Sir H. K. Storks.*) What do your men get to eat in barracks?—They get the usual military ration.

2917. Three quarters of a pound of meat and a pound of bread?—Yes.

2918. What else?—And vegetables.

2919. Do they buy that themselves?—Yes, as the line do.

2920. Do you know the quantities?—No; that depends upon the state of the markets.

2921. Have they an evening meal?—Yes.

2922. (*Mr. Martin.*) A supper?—Yes.

2923. (*President.*) Some years ago they had only one meal?—Yes, but now they are like the line.

2924. Do you recollect when the change was made from one meal to two?—I do not recollect.

2925. How did the men live then?—They used to live in public-houses.

2926. How did they manage?—They have always had coffee for breakfast since I have been in the service, now they have three meals.

2927. Do you know what the full amount of stoppage is in the guards, including messing and washing?—No.

2928. (*Sir H. K. Storks.*) Do you consider that the men get enough to eat?—I think they ought to have a full pound of meat; the meat they get is both young and lean.

2929. Considering the duties that a soldier in the Guards has to perform, and his exposure in the discharge of those duties, you do not think that he has sufficient food?—I do not think he has, and the cooking is abominable.

2930. How is it cooked?—It is cooked in the same way from the time the man enters the regiment till he goes out; it is beef and bouilli one day, and bouilli and beef the next day for 21 years.

2931. (*President.*) The want of variety wearies a man?—There is no doubt about it.

2932. (*Mr. Martin.*) It is injurious also on account of its sameness?—Yes, and they do not eat it.

2933. (*President.*) Why not?—I do not know; but I have gone into the barrack-room at nine or ten o'clock at night, and I have seen half a dozen basins of soup not touched; the men would not eat it.

2934. Does not that look as if the ration was sufficient?—The men cannot take it; it goes against their stomach.

2935. (*Mr. Martin.*) Is it owing to improper cooking?—Yes.

2936. (*President.*) You are surgeon-major of a regiment consisting of three battalions?—Yes.

2937. Therefore it is similar to a brigade?—Yes.

2938. Is the surgeon-major an administrative officer or an executive officer?—He is both, but his principal duty is executive. There is no doubt of it; as he has charge of a battalion.

2939. (*Sir H. K. Storks.*) You discharge the duties of surgeon of the battalion?—I discharge the same duties now that I did when I first entered the service; the very same.

2940. (*President.*) Would it be an advantage at your rank that you should have comparatively no medical duty to perform, but that you should be confined to the administrative duty of superintending the hospital?—That would be a farce, I think, altogether; there would be nothing to do.

2941. Do not you think that you are more capable of exercising the executive duties of a medical officer than you were when you were a young man?—Yes, with my experience it would be quite a different thing; otherwise it is getting very irksome.

2942. (*Mr. Stafford.*) What is getting very irksome?—The duties.

2943. More so than they were?—Yes; of course the older a person gets the more irksome they become.

2944. (*Chairman.*) You heard some questions put a short time back with regard to the clothing and the stocks of the soldiers; has anything come under your notice with regard to the clothing that you can suggest?—I certainly should agree with Mr. Alexander that the soldiers ought always to have flannel shirts, and likewise that the stocks should be done away with if possible.

2945. (*Sir H. K. Storks.*) What would you put round their necks?—I do not know that you want anything but his shirt collar under the coat.

2946. (*President.*) Have you seen any bad effects resulting from the use of stiff stocks at Chobham, for instance?—Yes, often I have seen men falling out.

2947. For what reason?—The men could not breathe; they were almost suffocated.

2948. Was that from carrying a very heavy knapsack?—Yes, but the stock is always the first thing they take off.

2949. When it is taken off do the men then go on all right?—Yes, on the line of march a man takes it off and carries it.

2950. (*Mr. Alexander.*) If a man drops down with his stock on, if it is removed he is up immediately?—Yes; I saw one of the most heart-rending things in Portugal. We lost in little more than half a mile five men, who dropped down dead in the ranks.

2951. (*President.*) That was not, I presume, from the stock alone?—No; but it was part of it.

2952. Do you think that the stock contributed much to it?—Yes.

2953. If it was light, and not too high, you would have no objection to it?—None.

2954. (*Sir H. K. Storks.*) You see no objection to a horsehair stock?—None.

2955. (*Mr. Stafford.*) Are you satisfied with the way in which the knapsack is fastened on?—No; but I do not know how it is to be remedied. I am certainly not satisfied with it; the breast strap is always the thing that confines the respiration of the men.

2956. (*President.*) Do you know anything of Berrington's knapsack?—No, I do not.

2957. (*President.*) The knapsack is fitted inside with a wooden frame, is it not, to keep it in shape?—Yes.

2958. Does not that add to the disagreeableness of carrying it?—Yes, it must do so.

2959. Do you know the French knapsack?—No, I do not.

2960. You say that the perpetual monotony of the diet is objectionable?—Very much so.

2961. That is a monotony in the material of the ration, to begin with?—Yes; but the cooking is more objectionable.

2962. Have you ever tried to remedy that in the Guards?—Yes.

2963. How?—One summer I was at Windsor, and we found out an old oven there that had not been in use for many years, and we set it going, and we used to bake meat there all the rest of the time we were there.

2964. Did you bake bread there?—Yes, the women baked the bread; we also got up Irish stews.

2965. Did you succeed in that?—Very well.

2966. (*Mr. Martin.*) And the men were pleased with that change?—Yes, they were quite delighted.

2967. (*President.*) Were the men the better for it?—I do not know; I could not exactly trace that.

2968. How long had you that in use?—Nearly five months.

2969. Why was it given up?—We left, and came up to London.

2970. And the battalion that followed you did not adopt it, I suppose?—I do not know. We have got ovens in the Wellington barracks.

2971. Do you give the men roast as well as boiled meat?—I presume they do so, but our people are not there. I know that the ovens are heated very often.

2972. (*Mr. Stafford.*) What number of men have you at present in London?—There are four battalions, 2,800 men.

2973. Do you think that your list in the hospital is larger or smaller than the usual average?—The Grenadier Guards have only 700 rank and file in London just now.

2974. It appears that there are 55 in hospital?—I do not think that is correct; it is 35. I should say that there are 5 per cent. in the hospital to-day of the battalion in town.

2975. Is that larger or smaller than the average number?—I should say the average.

2976. What do you find the men in the hospital? Do you find them bedding and body-linen?—No; they use their own body linen. We have got a certain number of hospital shirts, which belong to the hospital, that we use when it is necessary to give a man a shirt when his own is dirty. For the men coming home from the Crimea we were obliged to find shirts the moment they came; they were covered with vermin.

2977. (*Mr. Alexander.*) Your men do not put aside their packs?—No, we have no hospital dress.

2978. (*Sir H. K. Storks.*) Then a man wears his uniform?—Yes.

2979. (*Mr. Stafford.*) Have they any dressing gown?—Yes; they have in each ward about two dressing gowns.

2980. (*Mr. Alexander.*) Would it not be advisable to allow hospital dresses to be worn, and put the packs into the pack store?—Yes.

2981. You would prefer that the hospital should supply everything requisite for the soldier?—Yes.

2982. And his pack to be put aside?—Yes.

2983. (*Dr. A. Smith.*) Would you give the soldier a flannel shirt summer and winter, as the regular shirt of the men?—I would.

2984. Both in the ranks and in the hospital?—I would always have cotton shirts for the hospital, in cases of fever, in preference to linen.

2985. (*Mr. Stafford.*) How is the washing done?—It is done by the new apparatus in Wellington barracks, which is one of the greatest improvements I have seen for many a day.

2986. (*President.*) Is it done in your own laundry?—The laundry belongs to the government, and the washing is done in it for all the troops in London, and for those at Windsor.

2987. Do you wash for any other troops at Windsor, besides the guards?—Yes, they wash for any one; it is under the charge of the barrack-master.

2988. Is it done by hired labour?—Yes, he has labourers there.

2989. Does he make a charge to each regiment?—No; he does not make a charge to the regiments of the line, but he makes us pay, because the regiment had to pay for washing before.

2990. So does the line pay, every man pays so much a day?—That is personal washing, I thought you meant the barrack washing; a soldier for his personal washing is charged 4*d.* a week.

2991. (*Mr. Stafford.*) What drinking or eating vessels have you in your hospital?—The greater number of our vessels are pewter, and a few block tin.

2992. How many do you allow to each patient?—There are plates and cups.

2993. Two cups?—No, not to each patient.

2994. (*President*) Is it a tin cup or crockery?—Tin.

2995. Have you no crockery?—We have crockery too, but most of them are tin.

2996. Do they drink their coffee and tea in a mug or in a tin?—The worst cases generally in mugs and the others in tins.

2997. (*Mr. Stafford.*) In what do you administer the medicines?—In glass.

2998. (*Mr. Alexander.*) You would prefer a flannel shirt both at home and on foreign service?—Yes.

2999. Always?—I think so.

The witness withdrew.

Adjourned to Friday next at One o'clock.

Friday, 29th May 1857.

PRESENT:

The Right Honourable Sidney Herbert, M.P.	T. Alexander, Esq., C.B.
A. S. Stafford, Esq., M.P.	Sir James Clark, Bart.
Col. Sir H. K. Storks, K.C.B.	J. R. Martin, Esq., F.R.S.
Dr. Andrew Smith.	Dr. John Sutherland.

President, The Right Honourable SIDNEY HERBERT, M.P.

Major-General Sir R. Airey, K.C.B.

29 May 1857.

Major-General Sir Richard Airey, K.C.B., examined.

3000. (*President.*) You are quartermaster-general of the army, are you not?—Yes.

3001. You have the general control in providing accommodation for the soldiers both in barrack and hospital?—The quartermaster-general has no control whatever over the providing of quarters, nor can he exercise any control even in the appropriation of barracks and hospitals; that was all done formerly by the Ordnance Department, and is now done by the War Department. Every room is marked by the engineer department for a certain number of men which they apportion, and the quartermaster-general has nothing more to do than to occupy them according to the appropriation made by that department.

3002. You merely say what barracks shall be occupied by what regiments?—Yes.

3003. You have no veto upon the amount of accommodation given within those barracks?—Yes. I may represent that the barracks are too confined for the number for which they have been appropriated.

3004. To whom do you represent that?—To the Minister for War.

3005. Have you often occasion to do that?—Very often.

3006. What is the result of your remonstrances?—If possible the appropriation is diminished; but latterly there has been such a pressure upon the question of billeting the troops, they have been very much crowded; and an excess of occupation has occurred with a view to avoid the greater evil of billeting.

3007. Great objection is made to the system of billeting in the towns where they are billeted?—Yes.

3008. You avoid that, do you not, wherever you can?—Yes.

3009. Is it often that you are obliged to have recourse to that, except with troops on the march?—Yes; latterly we have had recourse to it to a very great extent; that is, previously to the disembodying of the militia, billeting was carried to a very great extent, and representations were made from all parts of the Kingdom.

3010. Now that the militia is disembodied you have no more recourse to it than you had previously to the war?—None. Since the establishment of the great camps at Aldershot, Shorncliffe, and Colchester we have had no troops billeted.

3011. Do you often receive complaints that a greater number of men are put into a room in barracks than is permitted by the regulation?—No, that seldom occurs, because if a room is appropriated for 12 men there is only barrack furniture for that number of men put in, and therefore the commanding officer cannot by himself put more men into a barrack room than is authorized.

3012. Could not the commanding officer, for the sake of getting increased accommodation for some non-commissioned officers, crowd one room for the benefit of another?—He might do it, but it would be assuming a responsibility which he had no right to assume.

3013. Does not the thing occur?—I should say only as an exception.

3014. Have you ever heard of it in the guards?—Yes.

3015. You have no control over them?—No. It might happen also in individual cases in the line that the commanding officer might put more men in a room in order to provide accommodation for the serjeants or married men.

3016. In selecting sites for barracks and hospitals, is it usual to consult the medical officer in charge of the troops as to the probable healthiness of the site?—For barracks scarcely ever, but for hospitals latterly within the last three or four years it has almost always been done.

3017. For example, in the case of Netley the medical officers were consulted, were they not?—Yes.

3018. Was it done beforehand?—Yes. In the last three or four years the medical officers have been consulted with regard to hospitals only.

3019. (*Mr. Stafford.*) Were the medical officers consulted previously to the purchase of the site for Netley?—I believe not.

3020. The site was purchased before the medical officers were consulted?—I do not think that the construction of the hospital at Netley went through any military medium at all; it was done, I believe, entirely by the War Department.

3021. (*President.*) Is there any standing order or regulation making it necessary to consult the medical officer?—None.

3022. Ought there not to be?—Certainly.

3023. Supposing that the medical officer is consulted, and that he objects to the site, what would happen?—Taking it as a local question, the principal medical officer on the station would make his representation to the general officer, who would forward it to me for the information of the Commander-in-Chief, who would then refer it to the director-general, and send the whole representation with the opinion of the director-general to the War Department with his recommendation either one way or the other.

3024. The Secretary of State would decide, would he not, on the representations made to him in the correspondence on both sides?—Entirely.

3025. There is no person on the spot having authority to decide the question between the medical officer and the commanding officer?—None.

3026. With regard to barracks you say that they are never consulted?—Rarely; it has only been quite latterly when occasionally their opinion may have been asked verbally.

3027. Otherwise the engineering department are the entire arbiters of the whole questions of the site and construction of the barracks?—Quite so.

3028. The regimental hospitals are in the barracks, are they not?—Yes.

3029. Therefore, so far as they are concerned, the medical man has no voice?—No. They actually exist; the hospitals are there merely to be occupied.

3030. Its lot is cast in with the barracks?—Yes; in the new barracks there are instances in which the medical officers have reported on the insalubrity of the site. They did so at Winchester, for instance. There is a new hospital constructing there. I think that the situation is an extremely bad one. I went down to visit it; and I believe the medical officer also

reported against it. It is not only in a very low position, but it is on a piece of ground originally, I believe, the old ditch of the palace ; it is all artificial ground and I believe that the medical officers objected to it as a site for the hospital, but their objections were overruled.

3031. Does the medical officer in the first instance make his remonstrance through the Horse Guards, or direct to the War Department ?—The medical officer in the first instance makes his remonstrance to the general officer on the station, who sends it to the Horse Guards.

3032. So that the report and opinion of the medical officer when it goes to the Secretary-of-State is backed by the weight of the authority of the Horse Guards ?—Yes.

3033. But it is very frequently without effect, is it not ?—I cannot say exactly ; I have not had experience enough to know.

3034. In the case of the Winchester hospital, was that so ?—In that case the engineer had decided upon it and had constructed the building and I believe, though it did not go through me, another site had been recommended which was pointed out to me by the medical department as very desirable to be obtained.

3035. There the country had been committed to the expense and the insalubrity of the site had not been brought to the notice of the Horse Guards until the thing had been decided and the building commenced ?—Precisely.

3036. If a site is decided upon is the medical officer consulted as to the construction ?—Yes, the medical officer then is consulted as to the plan of construction.

3037. Would he have his opinion asked as to whether there was enough space allotted to each man, the ventilation, the sewerage, the supply of water, and so on ?—I do not know. It does not come within my department to answer that question specifically with regard to the minute details ; but with regard to space that has been fixed by the Ordnance Department or War Department, there are a certain number of cubic feet allowed per man.

3038. The general hospitals at Chatham are the principal general hospitals of the British army. Are you aware that the number of cubic feet allowed there is below the regulation ?—Yes.

3039. So that the regulation after all is not strictly observed ?—No, neither in hospitals nor in barracks.

3040. (*Mr. Martin.*) It is nowhere an imperative order as to the number of cubic feet ?—It is not exactly so many cubic feet fixed, it may sometimes be in excess and sometimes in diminution.

3041. (*President.*) Are you aware of what space in the hospital is allowed ?—Not less than 450 feet a man in the barracks, and in the hospital 600 to 700 feet.

3042. (*Sir H. K. Storks.*) That is not calculating the casualties in the barrack-room ?—No ; that is according to the appropriation.

3043. (*President.*) You speak now of the regulation for barracks in temperate climates ?—Yes, of course.

3044. You do not know what space is allowed between the beds in the barracks ?—There is no regulation about it, and it cannot exist, because if they divide the cubic contents of the room according to the number of cubic feet of air in the room they put the men in, so that if the room is very high, the men must be very much crowded.

3045. You are aware that the cubic contents alone give no rule as to health without a certain distance to keep them apart ?—Certainly it must be so.

3046. If there are complaints of defects in the barracks of bad ventilation, insufficient sewerage, the latrines, and drains, and so on, does the quartermaster-general's department interfere, or is that considered a question solely for the consideration of the barrack-master's department ?—Solely for the decision of the War Department. Everything now centres in the War Department. It is brought to the notice of the quartermaster-general, and the Commander-in-Chief represents it to the Minister for War.

3047. Under the old system you would have represented it to the Master-General of the Ordnance, and it would then have gone through the board to the particular department which it concerned ?—Yes.

3048. The War Department stands now in the position of the old Board of Ordnance to you ?—Exactly.

3049. Are they not more immediately under the control of the Horse Guards than they were formerly ? —I should not say control. The Horse Guards is in no character executive ; it can do nothing of itself ; it can only represent.

3050. In all points, take water supply or any other, all you could do would be to represent to the War Department that there was an insufficiency ?—Nothing more.

3051. For the purpose of remedying those things there must be co-operation between you as representing the army who are suffering from the deficiency, and the engineer's department who is to remedy it. Is there any means of bringing your department and theirs in contact ?—In case of any objection to a barrack in any way, either the want of ventilation or drainage, or any insalubrity, and it is represented to the quartermaster-general he can only forward that representation with the backing of the Commander-in-Chief to the Minister for War.

3052. Are an officer from the quartermaster-general's department, an officer from the medical department, and an officer from the engineer's department put into communication with one another for mutual co-operation upon the subject ?—Yes, that is the course. It is frequently the case that boards are assembled consisting of a quarter-master general's officer or regimental officer, an ordnance officer, and a medical officer.

3053. Do these work well ?—Yes, but the report can be only forwarded for the consideration of the Minister for War.

3054. Are you satisfied with that arrangement ; do you think that you get all that you want with regard to housing the troops ?—Certainly not.

3055. How would you improve it ?—It is the old story—money. Everything is stopped for the want of means.

3056. Supposing the money granted freely, is the machinery the best that you could have ? Are you satisfied with the simplicity of the machinery, and the means of getting what you want ?—As far as the machinery of the War Department goes I do not know. The only complaint that I have is the tardiness of the process, having to pass through so many hands. So far as the military departments go, it is immediate. We have a different system from the War Department—we work from above and they work from below. In the War Department everything comes up through a variety of channels until it gets up to the deciding point. We work from the deciding point at once. If an original paper comes before me, it comes to me first, and I act upon it immediately ; it may be subject afterwards to any representation from any person who is my subordinate who may bring some regulation to my notice which I may have overlooked ; but the action goes immediately from me in nine cases out of ten. The question probably goes that day to the War Department.

3057. In the War Department it is the reverse of that, is it not ?—Yes ; my paper goes then to some junior officer ; from that to one above him, and so on, I believe, until it gets to the top.

3058. It is the same system, is it not, that is in practice in the Colonial Office ?—I do not know.

3059. So far as you are acquainted with the barracks do you think that there is sufficient accommodation for the purposes of cooking in them ?—I think that our military cooking is of the rudest description, and I think it is by no means sufficient in any way.

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3060. How are the men's rations cooked ?—A company is generally provided with two boilers, in one of which the soldiers boil their meat, and in the other they boil their potatoes; they have nothing else; a man goes on with it from the day that he enlists till he is discharged; he lives upon boiled meat for 21 years.

3061. Do you believe that is distasteful to the men?—I am persuaded, having commanded a regiment for 14 years, that the men are perfectly sickened with it.

3062. Has it come under your notice that they do not consume the rations ?—Constantly. I have seen the meat after it has been boiled down to shreds thrown away ; the men would not look at it.

3063. Do you think that that arises from the ration being larger than is necessary for the man's subsistence ?—The meat ration is insufficient. I do not think that the soldier gets enough. I think that three-quarters of a pound of meat, including bone, is quite insufficient for the soldier.

3064. Even if you had a sufficient weight of meat do you think that it could be made more available than it is now and more agreeable to the soldier if he had better means of cooking ?—Certainly, if the soldiers had the means of roasting, baking, and frying their meat. Independently of the diversity of diet, which I am very much in favour of, I am sure it would be much more tasteful to the soldier.

3065. The ration has been added to abroad, has it not?—Very much.

3066. There are colonial allowances in several parts of the world, are there not ?—Yes, and in the field the soldier's ration is increased, and abroad he gets an increase of meat to his ration.

3067. But that is no greater increase than is made up for by the inferiority of the meat ?—No.

3068. You may consider the meat the same ?—Yes, abroad at some stations they get once or twice a week salt beef or salt pork, and they are very glad to get the salt pork.

3369. (*Mr. Martin.*) As a change ?—Yes, they like a change, but that is done to get rid of the surplus quantity in the store, which they are afraid may deteriorate, not from any wish to improve their diet.

3070. Would you wish to add to their rations other articles to rectify the present sameness of it, such as rice, peas, flour, and so on?—Certainly, and if I could I should alter the whole system of cooking. I think that diversity of diet would be a very great point to attain, and I should be inclined to make it all one ration and to put grocery, meat, bread, and all, into the man's ration.

3071. (*Sir H. K. Storks.*) You are of opinion that he should be fed by the government, wherever he is? —Yes.

3072. (*President.*) And that the amount which the Government gives him should be sufficient to keep him in perfect health ?—Certainly.

3073. (*Mr. Stafford.*) How would you improve the cooking ?—I should give them the means of baking, the means of roasting, and the means of frying; they should have roasting grates, ovens, and frying pans: I should have in every barracks a sort of small batterie, so that the men might have stew-holes, and fry upon them the same as they do in the French army.

3074. Would that add very much to the expense ? —No ; very little.

3075. Would you not gain it in the fuel ?—Yes ; they have them in the French barracks, and the men are using their stew-pans all day long ; they make stews, they stew vegetables, and improve their diet and diversify it very much.

3076. If you give them this increased ration you must have an increased stoppage, must you not ?—Not actually out of the soldier's pocket, perhaps less than he now pays. At present it is done by messes : one man from the mess goes out with a non-commissioned officer with the men's mess money, which generally amounts to from about $2\frac{1}{2}d.$ to $3d.$ a day in excess of what he pays for his regular ration; they go out and purchase their coffee, sugar, pepper, salt, potatoes, or anything else they can get.

3077. Is that compulsory upon them ?—Yes ; that is the commanding officer is allowed to expend a certain sum upon the dieting of his men, and he apportions that as he chooses.

3078. It is not to exceed a certain sum ?—No.

3079. $7d.$ or $8d.$?—It comes generally to $8\frac{1}{2}d.$ a day.

3080. Including washing ?—Yes, one halfpenny is allowed for that. The Guards pay more as they have extra clothes.

3081. You conceive that an ample ration for three meals with variety would not cost the soldier more than he is now compelled to pay in the stoppage for his ration and the stoppage for his additional messing ?—Certainly not.

3082. (*Mr. Alexander.*) Then he would always get it ?—Yes.

3083. (*Sir H. K. Storks.*) How would you provide this ration. Would you do it through the commissariat ?—Yes.

3084. Suppose the soldier to be sent on a detachment where there was no commissariat officer, how would it be managed then ?—In the same way as he does now when there is no commissariat.

3085. You would then let him purchase his own things ?—Yes.

3086. (*Mr. Martin.*) Would you have the young soldiers taught to cook, or so many men in a company? —The soldiers themselves like permanent cooks ; they do not like being sacrificed to the instruction of a young hand. Some men have more natural turn for cooking than others. The soldiers like regular company's cooks, and the same men.

3087. To provide against casualties would it not be well to have so many men per company taught cooking ?—Yes, certainly, but that would be a business of regimental detail and might be very easily done, because those young hands might go and stay in the regimental kitchens and learn the art of cooking.

3088. Does not it accord with your experience that nothing is done which is not ordered ?—Yes, but it depends entirely upon the commanding officer of the regiment in organizing all those minor details.

3089. (*President.*) That would vary in each regiment, according to the capacity of the officer commanding it ?—Yes ; it is like a private house.

3090. (*Mr. Martin.*) Should it not be a systematic instruction ?—Yes, I think there would be no harm in that, but the men themselves are very keen and alive to all these things, and if they get a bad cook they are the very first to complain to the captain. It is the custom in regiments that the messes are visited every day during meals by the officer, and he asks the question whether they have anything to complain of, and if there is anything really to complain of, they will invariably bring it to the notice of the captain.

3091. (*President.*) You were with the army, were you not, when they first landed in Bulgaria ?—Yes.

3092. There the system of the ration, and $3\frac{1}{2}d.$ a day stoppage, the men having to purchase for themselves, entirely broke down ?—Quite so.

3093. Then I think there was an additional stoppage made of above $3\frac{1}{2}d.$ a day, and the commissariat were to supply them with certain extras ?—Yes.

3094. Did that continue long ?—That continued all through.

3095. Except that when the commissariat could no longer supply them, the stoppage reverted to $3\frac{1}{2}d.$—Yes.

3096. Does not that great variety of stoppages in different circumstances, one stoppage at home, another abroad, another on ship-board; the stoppage abroad oscillating according to whether the commissariat could supply them or not with necessaries, create great confusion in the accounts ?—Very great and very injurious, very complicated, very difficult, and very unsatisfactory to the soldier; he is

never satisfied with his accounts; and he never understands them.

3097. It would simplify things, would it not, if there were a uniform stoppage with a full ration of three meals?—Yes.

3098. (*Mr. Alexander.*) And on board ship?—Yes.

3099. (*President.*) Does it come to your knowledge that near the end of the war the War Department sent out persons to make a rough equitable adjustment with the soldier?—Yes, and a great deal of dissatisfaction existed, and it exists to the present day. I should say that the Crimean soldier is very much dissatisfied with the state of his accounts, and he suspects that he was not fairly dealt with. A soldier will submit to anything that he understands, and that there is good reason for; but what he does not understand he is very dissatisfied with.

3100. Supposing the government chose to adopt this full ration with an enlarged stoppage, do you apprehend that it would be difficult to introduce such a change into the army?—I should think it would be very easy.

3101. Would not the men suspect the intention of the government in making an increased stoppage?—I do not think so, if it was reasonably and properly done; if you charge them 6½*d.* instead of buying their tea, coffee, and sugar, and vegetables, besides half a pound of bread; as every soldier buys half a pound a day in addition to the bread that he gets.

3102. Why so?—Because the bread with the greatest economy only does for breakfast and dinner, and he has to buy half a pound of bread for his evening meal, and also tea, coffee, sugar, pepper, and salt.

3103. (*Mr. Alexander.*) You let the men purchase what is necessary to keep them in health?—Yes.

3104. (*President.*) Under the present system, in peace, a man is compelled to do so; his officer sees that he does procure those articles and consumes them?—Yes.

3105. Can he evade that by some understanding with the serjeants?—No; I should not say that he could; the soldiers themselves are very sharp, in fact the men go out and make the purchases themselves.

3106. Suppose a man preferred spending his 2*d.* in drink, could he do it?—No, he cannot do that. A non-commissioned officer and some men of the mess go out together and the money is expended. There are instances in which there is a misappropriation of the money, and the men are tried by a court-martial.

3107. Those are the only cases?—Yes, quite the exception.

3108. In point of fact by the present system you have an enlarged stoppage sufficient to keep the soldier in health?—Yes, with the exception of the government ration.

3109. The government ration, together with what he buys, is sufficient to keep him in health?—Yes.

3110. In war that breaks down, does it not?—Yes.

3111. Then you have the evil of complicated accounts as to the stoppages?—Yes.

3112. Would it be necessary if you made a change to give to all the soldiers who had enlisted beforehand the option of continuing under the old system?—I should say not. I do not think that it answers, if you make a wholesome, reasonable, and good regulation, to consult the individual soldier.

3113. Do not they hold that they were originally enlisted upon the contract that they were to have 1*s.* 1*d.* per day, and only to pay a certain rate for the rations, would they not look upon a change as an infraction of that contract?—I do not think so; I do not think that those are the sort of questions upon which the soldier is litigious.

3114. (*Mr. Martin.*) All the questions that have arisen in various countries between the soldier and the government that he serves have almost invariably had reference, have they not, to money matters?—Yes.

3115. As the ground of his discontent?—Yes.

3116. You do not apprehend that there would be any discontent on the score of change?—No,

3117. (*President.*) That would depend a good deal upon whether the soldier thought that he had the turn of the bargain or not?—I think that he would be very careful that he got his money's worth. If he thought that he could have supplied himself cheaper than at the rate supplied by the government then there would be dissatisfaction.

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3118. Would he or not find himself in that position?—That depends entirely upon the legislation of the new principle. I think it ought to be done upon such equitable grounds that the men do not lose by it.

3119. At present by their own arrangements for buying, can they buy as cheap or cheaper than the Government could do, whose contracts are larger?—I do not think that there would be a great deal of difference; there is a good deal of competition in towns where troops are quartered.

3120. In point of fact you would take care to give the soldier everything he has now, and not to charge any fraction of a farthing more?—Yes; the soldier would be influenced entirely by his balance, and provided he got the same balance and good meals, he would be satisfied.

3121. From your experience in the East, do you believe that preserved meat can be more frequently used with advantage?—I do.

3122. It is cheaper than salt meat, is it not?—Yes.

3123. But it is a good deal healthier?—Yes.

3124. Cheaper and healthier?—I should suppose so.

3125. You saw a great deal of the evil which resulted from the salt ration, did you not?—Immense.

3126. Would it not have been possible for the government to send out meat very slightly salted, instead of being salted as the navy meat is?—Certainly.

3127. What was the length of time that salt meat was ever necessary to be kept in the campaign?—I think that if you sent it out periodically by instalments, a very short time, say six weeks, would have been quite sufficient.

3128. If it had been just sufficiently corned to last a couple of months, that would probably be all that was necessary?—Quite so. If Irish meat had been prepared in the way in which they prepare it in Ireland, and had been sent out to the troops, it would have been almost as good as the fresh meat to be obtained in the country. I think that those troops who were not close to the sea shore suffered as much in Bulgaria as they did in the Crimea from the diet.

3129. Why?—In the division that I was in, which was the furthest up the country, the men had nothing but their ration meat and biscuit, and some abominably baked bread, so bad that Mr. Alexander, who was principal medical officer, knows it was one of the great causes of dysentery and diarrhœa.

3130. (*Mr. Martin.*) Had you no preserved vegetables?—Nothing; and not only so, but the country was so thinly populated from the people having deserted from a certain degree of fear of the troops, and that they would be robbed, that there was the greatest difficulty in getting any thing.

3131. (*President.*) Were there no cattle in the country?—At first they were all driven into the hills.

3132. Could not the commissariat get at them?—The commissariat was so badly organised. The commissariat officers were officers of accounts. They were accountants, not field commissaries. They had no idea of stretching out into the country and bringing home produce.

3133. Is it not very difficult to have a practised commissariat in a country like England?—It is almost impossible; there is nothing analogous at all to it in England.

3134. (*Mr. Martin.*) Is it not essential that in time of peace, such a department should be made perfect in the event of war?—Certainly.

3135. And the time of peace is the time to do it, is it not?—Certainly; it is very difficult to put it in

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action; everything here must be done more or less by the system of contract; you contract with the butcher for so much meat, &c.; and even at Aldershot, now, it is done entirely by contract.

3136. (*President.*) In a country like England, intersected by rivers and railroads, you cannot march troops across the country and send a commissariat officer into the farm yards to buy beasts, when some contractor will supply you at so much per pound?—No.

3137. (*Mr. Stafford.*) Would you have any system of teaching cooks?—I think that that is a thing the men must learn themselves, I think they are quite capable of doing it if they had the means, but I think that the means are wanted more than any other adjuncts.

3138. You think that if they had all those means and appliances of which you have spoken they would soon learn cooking enough to vary the dressing?—Certainly. I think that you occasionally meet men in all classes of life who have a sort of turn for cooking, and those men would instruct the others. You find in a regiment that you get hold of men to cook for you, and if you go on detachment you give yourself no uneasiness about it, but they cook you a capital dinner.

3139. (*Mr. Martin.*) You think that if the men had both the means and appliances, the cooking, so far as the ration goes, might be left to their own internal arrangements?—Certainly. I commanded a regiment for 14 years, and some part of that time I was a married man, and I never had anything but a soldier cook, and he was a very good one; it was not always the same. The means of instruction are in the regiments themselves.

3140. (*Mr. Alexander.*) Do you think that the repairs might be done more easily and more rapidly by hiring labour than by employing engineers for the barracks and hospitals?—On the spot?

3141. Yes.—Certainly.

3142. (*President.*) What is the reason that everything the engineer seems to do so is so dear?—I really do not know. There is a technicality that attends all engineers. I do not understand it.

3143. Is what they do more lasting?—Perhaps it is of a more permanent nature; it is taken more *en grand*, and there is a want of simplicity about it. I recollect an instance. I was sent with a strong force into the county of Leitrim. We were encamped, and it was likely we should remain there some time. I wrote to Sir Edward Blakeney, stating that the men had no means of cooking, and the weather was extremely wet. We were near the famous Ballynamuck, on a very swampy bit of ground, and I wanted very much to get some means of cooking independently of the common camp kitchens, which were deluged with rain; and I proposed to Sir Edward Blakeney that we should be allowed to construct a cooking apparatus with two boilers in the usual barrack way; an engineer officer came down; there was an estimate and a specification, and then it had to be submitted to contract, and in about two or three months I should have had it done at a cost of 90*l.* but the end of it was that I said it was of no use doing it, we should not be that length of time there, and it was given over. I got it done by a man from the town of Mohill, and the cost was 17*l.*, or something less than 18*l.*

3144. (*Mr. Alexander.*) Would it not be better to have the barracks whitewashed by the regimental officials than trusting to the barrack department?—It would be more rapidly done.

3145. (*Mr. Martin.*) Is it the engineer corps that is specially employed in the construction and repair of public works?—Yes.

3146. There is no other department?—No; that was an arrangement of the Duke of Wellington's.

3147. (*Mr. Alexander.*) Would it not be an advantage if you had drying rooms for the men?—Yes, very great; we have them here in the barracks in London.

3148. But in all the barracks it would be an advantage, would it not?—A very great advantage.

3149. (*Mr. Martin.*) Does the practice exist in the foreign possessions of consulting medical officers on the sites of proposed hospitals?—No, I do not think so.

3150. (*President.*) Have you turned your attention also to the things which have a moral effect in barracks, such as the recreations?—Yes.

3151. Have the men the means of playing at games,—racket courts and quoits?—None at all, comparatively, and I think that they ought to be extended in a very great degree; I think that the men ought to have ball courts, racket courts are out of the question for the men, as they are expensive; they ought to have foot ball, cricket, quoits, and all sorts of games of that description; and I think there should be an improvement in the barrack system, giving them some rooms that they could go into and get a cup of coffee or tea. The question of smoking in those rooms has been experimented on, and in some instances it has succeeded and in some not.

3152. Should you leave that to themselves?—Yes; I think it is better not to over legislate upon those points.

3153. But they all smoke, do they not?—Very generally.

3154. It is convenient to them to be able to smoke in these rooms, is it not?—Yes; I think almost all soldiers smoke; it is a common thing for a man to give another man half a dozen pulls at his pipe, passing on. What we want more than anything is the lighting of the barracks, they have not the means of lighting. If you go in late in the long winter evenings you will see one man trying to read with a miserable tallow candle, and four or five other men huddled round him to listen

3155. (*Mr. Stafford.*) Who finds that tallow candle?—The barrack department.

3156. (*President.*) They have a regular allowance, have they not, for fuel and light?—Yes; all the allowances of fuel and light are by rooms divided into twelve men.

3157. Have you any barracks lighted by gas?—Some are; all the new barracks are: that system appears intended to be general.

3158. (*Sir H. K. Storks.*) The lavatories are very bad in the barracks, are they not?—Very bad indeed.

3159 (*President.*) They have urine tubs in the barrack room, and they are very offensive, are they not?—Very bad.

3160. (*Sir H. K. Storks.*) What means have the men of making water at night?—They have urine tubs.

3161. Do you recollect an order being issued calling the attention of the commanding officers to men washing themselves in the urine tubs?—It was the general practice throughout the army; they had no other means.

3162. Since when?—Since I have been in the army.

3163. (*President.*) What are those urine tubs made of?—Of wood.

3164. Do not they necessarily stink?—Most offensively.

3165. Why do they not give them chamber-pots?—It is not one of the barrack utensils, it is not barrack furniture. There will be no difficulty in having the same pewter chamber-pots as they have in the hospitals. I think that every barrack ought to be provided with proper utensils.

3166. (*Mr. Alexander.*) The privies are nothing more than cesspools?—They are abominable, and extremely offensive. The system was to empty them by contract, but latterly it is improved very much indeed, because it is all bought for manure.

3167. (*President.*) On field service if the site of a camp is selected, I do not mean a position taken up during the very short space necessary for certain operations in the field, but a permanent camp, would the medical officer be consulted as to the site?—I do not think that as a rule he would. Military reasons would govern, and if it was intended to take up such positions as we did in Bulgaria, the quartermaster-

general would select the site, and he would be governed in that selection by the proximity of wood and water, and the distance that the men had to go for it, and the importance of the position generally.

3168. In that particular case in Bulgaria, would not a medical opinion in one or two instances have been very advantageous, the medical men being more likely to know what are the indications of healthiness than a man whose attention has not been turned to those peculiar subjects?—I should say so, unquestionably. I think, individually, that if I commanded a body of troops I should, on those points, go hand in hand with my medical officer, and even in the removal of the camp, provided there were no military reasons which should overrule it.

3169. Of course any strategic reason would override that?—Yes.

3170. Feeling that, do you not think that by regulation the medical officer ought to be consulted and give his opinion?—Yes.

3171. Would it be a check to show whether his recommendation had been attended to if he gave his opinion in writing?—Certainly. I think Mr. Alexander must recollect an instance when I commanded the Light Division, on the first indication of cholera at Devno; it was on a Sunday. It was represented to me that a good many had fallen from it, and there was a question about moving the camp directly. I spoke to Mr. Alexander about it, who agreed with me in this—he said we must take great care what we do. Some commanding officers were anxious immediately to move their regiments a quarter of a mile off. Mr. Alexander's opinion with my own was, that it would be very dangerous to do that, because by the panic we might create that very consequence that we were trying to avoid, and we decided to hold hard a little. I rode off in other directions to look for another site, and when I came back I found either Mr. Alexander at my tent or a note to say that he recommended the removal of the camp, and we marched the next morning.

3172. (*President.*) Did you get more space?—We went to Monastir, which is called the Montpelier of Bulgaria, but I think they died there much faster. After that we moved the regiments in different directions to a long distance, still the disease followed them. And a curious fact is, that the 19th regiment remained upon the dirty soiled ground of all the rest, and the only place that could be used as latrines was a deep rocky ravine, which had been so much used by the whole of the divisions, that the exhalations thrown up were so bad, that one evening, when I was riding late through it, I determined to remove that regiment though it had been perfectly healthy. I moved it on to a fine beautiful piece of ground, and there they took the cholera immediately.

3173. Could you ascertain what were the other causes that produced that effect?—No.

3174. (*Mr. Stafford.*) Was there any difference in their system of cleansing themselves?—None whatever.

3175. (*President.*) Were the tents pitched nearer or further apart?—No. I think that the ground of the 19th was rather more crowded.

3176. You had not the power, I suppose, of reducing the number of men per tent?—No. There we could not; we were only allowed so many tents for a battalion, but that is a question that is very open. Whenever you have the means, a general officer can do anything that he likes. Afterwards we were much less crowded.

3177. Is there any code of regulations existing as to the management of camps?—Yes; there have been various codes for the establishment of camps, and regulations as to the distance between the tents, and everything connected with them. The last is this book, which was brought out in 1853, containing all the regulations for field service.

3178. That gives rules for draining, cleaning, and the regulations of the abattoirs?—Yes. Then in the general regulations of the army we have the same (*handing in the same*).

3179. Take the first page of this, which says, "That the means of passing freely through the encampment with a large front be maintained; that "the tents be disposed with a view to the greatest "amount of order, cleanliness, ventilation, and salu-"brity." Of course that is an object; do not you lay down what are the means by which that can be attained; what distance they should be apart?—There are certain rules as to the distance from pole to pole of each hut; then there are also rules as to the allinement of the tents, whether in single or double lines; that depends a good deal upon the opinion of the general officer. You meet one sometimes who prefers symmetry to anything else, which is very unfortunate.

3180. And there are commanding officers who like to have their men compact?—Yes. I am more in favour of single lines. I think that the tents ought to be all perfectly single, and that every tent should have its own street both before and behind it. Others like them put back to back. Then very frequently the ground may be confined because you take up a particular ground for a division or a brigade, then you are obliged to put those three or six regiments into that piece of ground, and you divide it in the best manner you can.

3181. Do the regulations point out the means of draining the tents and digging a fence round them?—There is an order that every tent is to be trenched, and that there be general drains to carry away the water. The ventilation is very imperfect, and there have been a great number of inventions and experiments examined by committee after committee, but there has been none found practically to answer for the field. The tents have defective ventilation, they have four small holes at the top covered over but it is very imperfect.

3182. What is the best kind of tent?—I think that for service the best kind of tent is the bell tent, and the hospital marquee.

3183. Should it be made with canvas or cotton?—Of canvas.

3184. Is that better than cotton?—We have had many experiments, and sent to all parts of the world for cotton and linen tents. All the linen tents used by foreign nations are double and are much heavier, and when they are double they are more impervious to the air than a canvas tent.

3185. Do they keep out the water better?—No.

3186. What is the advantage of them?—They are much lighter when single.

3187. What are the Turkish tents?—They are calico, and much hotter. If you could have a double tent, so as to allow the air to pass through the intervening space, it would be a very great advantage.

3188. They have those for hospital marquees, have they not?—In some cases they have.

3189. (*Mr. Martin.*) They are only in general use in hot climates?—Yes; we have no actual regulation double tents; but we have a lining to the marquee.

3190. (*President.*) You do not like the little tente d'abri?—Very much; but that is merely for bivouacking and marching. I think that the French system is extremely good; they carry their large tents entirely in their equipage de train, the men march with their tentes d'abri on their backs, they pitch their tents, and remain there as long as they halt; but if they are going to be stationary the fourgons come up and they unload all their large tents and pitch them, and their tentes d'abri are taken away.

3191. Before Sebastopol the French suffered, did they not, from being reduced to their tentes d'abri long after the weather required better shelter?—They had no large tents during the winter of 1854. General Canrobert came to me complaining of the condition in which his men were; he said that they were dying in the mud.

3192. You would recommend those small tents in addition to our tents, not as substitutes?—No; but you cannot have any celerity of movement with the immense weight that the English soldier carries.

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3193. What are the arrangements with regard to cooking in the camps ?—The only arrangements are the construction of camp kitchens, and those are merely made by collecting stones, if you can get them.

3194. Do the men make them well ?—Very well.

3195. (*Sir H. K. Storks.*) They cook by squads instead of by companies, do they not ?—They cook generally by tents. They cut a trench in the ground, and if they can get a few iron hoops from barrels they put bars across ; but, however, the men become extremely ingenious, as Mr. Alexander knows. They built bakehouses almost directly by cutting a hole in the side of the cliff.

3196. (*Mr. Martin.*) Do you trust to the casual circumstance of there being bakers in the regiment, or are there men trained to baking in time of peace ? —Never.

3197. Do you trust to chance ?—Yes ; and the consequence at first is that the baking is very bad and very defective. The system is this, if it is intended to bake in the regiment, the officers of the regiment are ordered to send in a nominal list of the men who bake. A soldier says, "I will turn my hand to bake," perhaps he has never baked in his life ; he commences baking, gets drunk, and the bread comes out a heavy doughy mass, and it is a most unwholesome mass.

3198. You think it desirable, do you not, that men should be taught to bake ?—Yes, but I think that we ought to do what the French do, they enlist the man that they want ; they enlist in their corps bakers and artificers ; we have nothing of that sort : there was very good baking in the Crimea latterly, all the divisions had bakehouses worked by soldiers.

3199. (*President.*) Would you attach to the companies men for the purpose of baking ?—Yes, soldiers.

3200. (*Sir H. K. Storks.*) Who should be struck off all other duties ?—Yes, but soldiers.

3201. (*President.*) And for cooking the same ?—Yes. I think the cooking would be better.

3202. You would be entirely at a loss if you lost your cook, the other men not being in the habit of cooking ?—As it is in all the regiments you have your cooks and assistant-cooks ; a man taken as an assistant-cook very soon picks it up, and cooks you a very good dinner.

3203. (*Mr. Martin.*) Your department is specially employed in the military topography of the army ?—Yes.

3204. Do you think that the Department of Medical Topography should be officially associated for field purposes with that of military topography with reference to the influence of locality, and external circumstances affecting the health generally, with regard to the sanitary condition of the army ; how would you propose to associate medical with military topography ?—I think that every officer of the Quartermaster-General's Department who is desired to take up ground, ought to be accompanied by a medical officer.

3205. As a matter of regulation ?—Yes, laid down as such, and that if there is any want of concurrence he should put his opinion in writing.

3206. Where military considerations do not overrule the medical, his recommendations should receive due attention ?—Certainly.

3207. (*Sir James Clark.*) Do you mean that a medical officer, specially appointed to superintend the sanitary condition of the camp should accompany the army ?—No I think that the principal medical officer of the division should be in connexion with the quartermaster-general, and that they should work together.

3208. Would it be a good arrangement if an officer was appointed entirely to superintend the whole camp and report to the quartermaster-general ?—I have always thought that independently of the chief medical officer in the army there ought to be a field deputy, who should be the officer who should have that charge that you speak of together with the other medical duties ; that he should inspect all the hospitals and report to the principal medical officer.

3209. (*President.*) He would act as the head of a sort of sanitary police ?—Yes, he would be the second medical officer, and he should be responsible on all those points.

3210. Would he not be very much what is now wanted in the towns in England, namely, an inspector of nuisances ?—Yes, but his functions would go far beyond that again ; he would have the inspection of all the hospitals, and be a practical working man in the field.

3211. Though a medical man ?—Yes ; a military medical man of high rank.

3212. (*Sir James Clark.*) And he should be immediately under the inspector-general ?—Yes, under the senior medical officer in the camp.

3213. If you had had such an officer in the Crimea would he have been very useful ?—Extremely useful ; because the senior medical officer's whole time was taken up in administration, so that he could not give any personal attention to the subject.

3214. (*President.*) You state that there are regulations (which you have put in) as to the mode of encamping. Are they as full as they ought to be after the last war ?—Certainly, I think so, to any man who is really anxious to interpret them properly.

3215. Are there any sanitary regulations extant for the proceedings to be taken on the occupation of towns ?—No ; there are no particular regulations except those which would naturally strike everybody ; but I have never seen a native town, from the day that it was occupied, that did not immediately assume an aspect of cleanliness and order that did not belong to it before the troops were there.

3216. In a town of 10,000 inhabitants, if you suddenly added 10,000 men, unless some immediate precautions were taken, the doubling of the population must necessarily produce disease ?—Yes. But if in a village containing 500 people, you put 500 men under military control and discipline, they commence a system of cleanliness and order which changes the aspect of the town immediately.

3217. You would not go so far as to look to the sewerage of the place ; it would merely be external cleanliness ?—Yes.

3218. Would not regulations be useful on that point ?—Yes ; I think it would be very advisable, but I think it would be naturally done. If you occupy a town with 10,000 men, there is no such thing as putting 10,000 men in a town ; you take perhaps a few houses, public buildings, and you can put the troops in them, and they assume the character of barracks directly.

3219. In the same way are there regulations for bivouacking ?—No ; it is arbitrary. That is for a night or two nights.

3220. After the experience of the war and the experience of Aldershot as to huts, does anything occur to you with regard to any improvement in their construction ?—Yes ; I think that our present huts are very imperfect, I think that they want ventilation ; I think that the whole construction has been bad, the material has been very flimsy, and it has been a system of nailing. In the huts that are sent out to North America, into the bush, and to Australia there are no nails at all ; there are grooves in the uprights and slip the boards into them, and four or five men can put up a hut.

3221. That is, supposing that you have them all ready made by carpenters, but if the men had to hut themselves, merely having the timber given to them, what system would you adopt ?—Then the best hutting is the system adopted by the Turks, and taken by the Sardinians a great deal from them ; the best hutting that I saw was in Omer Pasha's army.

3222. In what respect were they the best ?—They were warmer and more impervious to the rain. They had a manner of mixing the clay and the ashes of wood and the dung of horses together, which they

put upon hurdle walls. I think they were the best huts of all, wattle and dab. Suppose we take this table for the ground, they excavated about two feet, so as to leave a wall all round, then they put the wattle and dab for walls, and roofed it with any timber they could get, which made it a very warm hut.

3223. (*Sir James Clark.*) Does not it get wet when it is under ground?—No, it is perfectly dry; there is a drain all outside.

3224. (*Mr. Martin.*) Should the soldier be taught, as a matter of duty, to hut himself?—Certainly, he should be taught everything, and they soon pick up a knowledge. It is the same system upon which they make gabions or hurdles. You teach a man, he puts a quantity of stakes on the ground in a line, and he weaves the wattle into them.

3225. (*Sir James Clark.*) Were the Turkish huts ventilated?—Not so much as we should think right; there was a doorway, and at the other end there was a square window.

3226. You stated that the huts at Aldershot are badly ventilated?—Yes.

3227. Was any medical man consulted in the construction of those huts?—I do not know. Even in the Crimea the medical officers frequently remarked the imperfect ventilation.

3228. Is it desirable, in forming the huts, that a medical opinion should be taken?—Yes, on every subject that is necessary.

3229. (*Dr. Andrew Smith.*) Do you think that in the army generally supervision by the senior officers throughout the whole of the grades is necessary?—Certainly. We could never get on without it.

3230. Do you think, from your experience of fourteen years in the command of a regiment, that you could safely trust to the captains of companies to take care that the arms, accoutrements, kits, &c., were always in the condition which they ought to be?—Most certainly not without supervision.

3231. How often would you take steps to ascertain that as a colonel of a regiment?—It is the practice in all regiments, with regard to the arms, that the commanding officer inspects his regiment every day; he more or less inspects the arms every day, but they are inspected under his eye when he is on parade, he sees the officer examining the arms and inspecting them.

3232. He would not trust, in the case of barracks, entirely to the captain of companies saying that all the barrack rooms were kept in proper case, would he not go round himself?—Invariably; it is one of those questions that the commanding officer is perhaps constantly finding fault with the captains of companies for want of attention to. If it were left entirely to them the whole thing would break down.

3233. You would not think that a regiment might be left to itself, without the occasional inspection of the general officer?—No.

3234. (*President.*) How frequently need that take place?—It must depend entirely upon the regiment.

3235. You do not think that it should be weekly?—No, not for the general officer. It is a very wide question. The general officer has to look into all the instructions of officers, and a great many other details. I think that the present half-yearly inspection is quite often enough; but with regard to the commanding officer of a regiment, it is the practice for him to visit his barracks all over, at least once a week, and no regiment is really in very good order unless it is so visited by the commanding officer himself. It makes the greatest difference whether the commanding officer really does it, or does it by deputy.

3236. (*Dr. Andrew Smith.*) Supposing a brigade is at Shorncliff, and a principal medical officer is there, he stands there, does he not, with regard to the medical officers nearly in the same position as the commanding officer stands to a regiment. How often, do you think, for the good of the service is it necessary that he should go round the hospitals?—I should think that once a week was as little as he ought to do that.

3237. (*Mr. Alexander.*) Do you think that he ought to examine into the extras and the diets, and to see what the regimental surgeon had done, and find fault with it?—I think that he ought to have the power of examining into all the details.

3238. Do you not think that the regimental surgeon is a sufficiently good judge as to prescribing for his patient without this sort of superintending during the week?—That is a question which is difficult for me to answer. It must depend upon the ability and character of the medical officer of the regiment, but it is like the case of the commanding officer of a regiment. Some commanding officers of regiments require more supervision than others.

3239. (*President.*) Is there any strict analogy between the duties of a regimental combatant officer and a medical officer?—No.

3240. The object of the commanding officer is to see that the company's officers do their duty according to certain rules laid down; do not you imagine that the regimental surgeon treating his patients would be a better judge of what the patients required than the inspecting officer who is not treating them?—Yes, certainly; if a man is fit to be appointed surgeon of a regiment, I think that the treatment of the individual men must be left to him.

3241. You would have frequent inspection as to seeing that the hospital was in order, but not for the purpose of interfering with the discretion of the medical officer, unless he found that he was inefficient?—I should suppose not.

3242. (*Dr. Andrew Smith.*) If you had a surgeon in your regiment you did not consider a very efficient man, and the regiment had no confidence in him, and the inspecting medical officer found it necessary frequently to visit that regiment, would he not be doing his duty, and doing the duty that the service required of him, if he examined into the treatment adopted by the surgeon?—Yes; but I should suppose that a man of that sort ought to be got rid of. In the medical report that is made the peculiar disease of the man is always mentioned, and more or less his treatment.

3243. (*Mr. Martin.*) In your experience have you not found that the most important medical officer in the army is a trustworthy regimental surgeon?—I think that in the regiment he is, but the administration does not belong to him; still I think our regimental system is extremely good.

3244. In civil life the physician and the surgeon of a hospital is the great authority for science and practice?—Yes.

3245. Do you think that a regimental surgeon is the only man in the army who would appear to stand in a corresponding position?—Yes.

3246. (*President.*) Do you think that the army is well clothed and equipped?—No. I do not think that our clothing is at all good.

3247. Are there any parts of the soldiers' clothing which you should like to see changed?—I think that all our cloth is bad, and I think that the boots are bad.

3248. The cloth is very much improved, is it not?—The last issues were improved, but it is a hard and unpleasant cloth for a man to wear; it chafes him, and it does not wear well either; and it is full of size and stiffening.

3249. (*Mr. Stafford.*) Have you had any opportunities of comparing it with the French cloth?—Yes, frequently.

3250. Which is the best?—The French. While I was in Paris I heard from the French Minites for War that it was all English cloth.

3251. (*Sir H. K. Storks.*) Do you think that the chako is a good head-dress for the soldier, considering the climates to which he goes in the course of

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his service ?—It is a very difficult question. I think that perhaps a felt hat is as good as any. When you limit the price to a certain sum, it is made of hard and durable material, but it presses very much upon a man's forehead, although very much less than it used.

3252. (*President.*) It is a much better shape, is it not ?—Yes, it is. I do not think that it is particularly good, because it defends him very little from the sun, and the rain comes down the sides of it.

3253. (*Sir H. K. Storks.*) Do you consider the forage cap to be a useful head dress ?—We must have something of that sort soft and light. I think it is very difficult to adopt any one uniform cap for the West Indies and North America.

3254. You would change the cap according to the climate to which the soldier went ?—Yes ; we do that more or less. In North America, the men have a fur cap.

3255. Take the tropical climates. There has been no change there as to cap ?—No.

3256. (*Mr. Martin.*) The men make it for themselves; they put a piece of cloth round it, do they not ?—They did, but it never was adopted till the army went to the Crimea, putting a white covering.

3257. (*Sir H. K. Storks.*) Do you think that a peak is desirable on the forage cap ?—Yes.

3258. (*Mr. Alexander.*) Do you prefer the French to ours ?—The French peak.

3259. (*President.*) Do you recollect the flat forage cap that the guards had, a few years ago?—Yes.

3260. Was that a better cap ?—No.

3261. Why not ?—The men did not like it—it departed from its original character, and it was soon abandoned, the men were ashamed of their appearance ; it was not found to answer.

3262. (*Sir H. K. Storks.*) What do you think of the stock ?—I think that a handkerchief is a better thing.

3263. (*President.*) A handkerchief looks bad, does it not ?—It looks untidy, but it is more comfortable to the soldier.

3264. (*Mr. Alexander.*) Could not you adapt the collar of the coatee to fit the neck, so as to do without the handkerchief, ?—That has been tried; they had a piece of cloth, but that gets so greasy that it does not do.

3265. (*President.*) Before the change they had the Prussian collar, had they not ?—Yes; the stock was not seen.

3266. (*Mr. Alexander.*) Could not you have a piece of leather ?—I do not think that the men care very much ; on the line of march if a man was obliged to wear his stock he would complain, but they used to be taken off and carried on the muzzle of the firelocks.

3267. (*President.*) Is it a good thing that it should be so made that when the man comes to move he must take it off ?—The men like to look well, and it looks better.

3268. Do you think that it does look well ?—Yes.

3269. (*Sir H. K. Storks.*) Do not you think that carelessness in dress has a very bad effect in the army ?—Yes, very bad.

3270. Do you think that it demoralizes the soldier ?—Yes ; it does a very great deal of harm. There is nothing that the men care more about than appearance.

3271. Do not you think that flannel shirts would be a better thing than linen ?—I am very much in favour of flannel.

3272. In all climates ?—I had it in my regiment, and the men were very dissatisfied when they were obliged to change ; and a great many of my men kept them,—they begged to be allowed to keep them.

3273. (*Mr. Alexander.*) Is not the tunic preferable to the old coatee ?—Yes.

3274. (*Mr. Stafford.*) Have you any alteration or modification to make of the evidence which you gave before the select committee on the army medical department in June 1856 ?—I must look it over. The only thing that I am anxious to press upon the notice of the Commissioners is the insufficiency of the meat rations, the want of diversity of diet, and the want of recreation, games, &c.

The witness withdrew.

Robert Rawlinson, Esq., examined.

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3275. (*President.*) You are a civil engineer, are you not ?—I am.

3276. Were you one of the sanitary commissioners sent out to the army in the East ?—Yes.

3277. You had had some experience in sanitary works and regulations before that ?—I was one of the inspectors under the General Board of Health, and it had been my duty to inspect many towns in all parts of England.

3278. The report of the proceedings of the Commissioners of December 1856, may be taken, may it not, to contain all the opinions which you had to give upon the measures necessary to secure the sanitary state of the army in the field ?—I should scarcely say all, because naturally there are things remaining in one's mind, that are not altogether embodied in any report, and although that report is a very full, and I believe a fair statement of our experience in the East, many things might be added to it.

3279. Will you suggest what you refer to ? — I perhaps may state to the Commissioners that our report deals with facts in the simplest possible manner as they came before us. It states what we found, what we suggested, and what we did ; but I can easily imagine that other circumstances and other facts might arise of a very different order and nature, and you could not probably find any recommendation in the Crimean report which would apply to this new order of things. For instance, with regard to an army occupying a new country, I can quite conceive how many of the sanitary evils that were rectified might be again repeated. I think for instance in occupying a town as to which we have given certain suggestions, that soldiers might be put into a town in which they would be overcrowded if the inhabitants remained there ; they might be also put into buildings to be turned into barracks, and they would be overcrowded. You will find one statement in the report that the cubical space per man must always be in connection with the distance apart of the beds—now you must not take the one for the other ; you might have all the cubical space required but not the distance apart. Then again as to the water supply, I think that is a question which deserves most serious consideration. I cannot pretend to say what are the whole of the army regulations, I am not master of them, I can only speak of what came under my own eye and what I think is necessary. I found in the Crimea that the water supply was neglected. When I say neglected, I mean that the springs were left as open springs. Many of the spring-heads—probably nine-tenths of them—were in the possession of the French, the Sardinians, or the Turks, our troops receiving the fouled or refuse water ; and many of the wells had been ruined on the first occupation. These were not repaired. The troops quartered near those wells drew water indiscriminately from them. They filled a bucket with water and drew it to the top, and water was scattered about from morning to night ; they wasted as much as they used and they drew the water muddy. I think that the water supply should be put immediately under military surveillance, that sentries should be put over every source of supply, and if it is impure, means should be taken to make it better ; that if springs exist, reservoirs should

be made to equalize the yield of 24 hours, and that the water should not be drawn by dipping, but be drawn from taps.

3280. You came to this conclusion from having observed the bad effects of the neglect of those precautions?—Yes; from observing the great waste; besides the men were continually using muddy water; it was dirtied from large copious springs, by being drawn at the spring-head, and the earth washed back into the water. The mode of drawing was all by dipping, instead of having the water drawn from taps.

3281. (*Mr. Stafford.*) Did you see many arrangements for keeping the water in a series of barrels, one placed below another?—I think there were some temporary arrangements made at the Castle hospital, butthey were very rude and in the most imperfect form.

3282. (*President.*) If you let water come into a succession of troughs that is a bad plan for the horses; they will not drink the water that has been blown into by another horse?—At the cavalry camp, with several thousand horses, the method of supplying them was to place trough below trough, one trough overflowing into the next below. Horses object to blown or tainted water from other horses, and frequently would not go below the third trough; and there being entire horses among them, there was plunging and kicking from morning to night. A very easy engineering appliance would have filled every trough independently, and no more water would have been required. Either a pipe or a wooden trough might have been taken down behind, with the means of regulating it, so that each trough should have an independent supply, simply by regulating the feed into each trough, so that each should get its own independent supply, and free from those above it. The evil was, in allowing the overflow from one trough to fall into the other, so that the tainted water above ran through the line of troughs. Each trough should have its own independent water supply.

3283. That is as regards the supply for the horses, but with regard to the supply for the camp would you require any materials to be carried with the army, or could you husband the water by means available on the spot?—The only materials that would be required would be a few dozen common screw taps,—the common house tap—say inch taps, and a few yards of pipe, but that is not necessary, because an engineer officer might make upon the ground within a couple of hours a square box, into which he could screw his taps. Suppose a spring yielding 10,000 gallons a day, they could make a tank 30 feet by 20 feet, and a yard deep, and then place a trough at the lower end communicating with the water and having a dozen or more taps outside, and they might draw from the taps and not dip the water. It is the dipping and splashing back that soils the water.

3284. (*Mr. Alexander.*) What number of taps would you have, as a great deal of time would be required to draw water for 5,000 men from a few taps?—You might put in three dozen. You could multiply your taps and give more men access to the water than in the dipping process.

3285. (*President.*) No tap will fill a pail as quickly as dipping?—It will fill it in 5 seconds.

3286. Under your plan you would make a number of reservoirs into which buckets could not be dipped?—Yes, and if you must dip, make your arrangements so that the water shall not flow back to taint the remainder, and so be muddy water from morning until night; multiply the number of places for drawing, and protect all watering places, so that the water shall not flow back out of the bucket with the soil into the water that will have to be dipped the next time; I would place a sentinel or sentinels upon every water supply, and not allow the men indiscriminately to take it; I would place a guard and man or men to draw and serve the water out.

3287. Can you purify water at its source without difficulty or not?—There is no serious difficulty; a sapper properly taught could do it if he had four pieces of board, and if he were to make a square trough and nail it up (*describing the same*) and simply fix it at an angle, placing a grating over the bottom and filling it for two feet in depth with sand, gravel, and charcoal.

3288. Where is he to get the grating?—He might make it out of timber, anything to keep the material from coming out, run dirty water through some sand and charcoal and it will come out comparatively pure and free from injurious vegetable matter.

3289. Where is he to get the charcoal?—You should have charcoal burners.

3290. You would have men among the sappers accustomed to charcoal burning?—Yes; the charcoal could be easily burned. It requires a little experience. You must cut the timber down and sod it over; you cannot make it by an open fire.

3291. Where timber is available there is nothing easier than to make charcoal?—I should say so; but you must have a charcoal burner.

3292. That is one of the things which you would exact from the sapper that he should be acquainted with the mode of burning charcoal?—I think it is one of the things that you ought to have the means of doing in the army, because charcoal can be used for other things. It is extremely useful as a deodorizer in any temporary hospital.

3293. Is there anything else that occurs to you as a mechanical improvement that would be useful in connection with the army?—I must speak a little under correction, because I really do not know what the military engineers have at their command. I only know what they had not at their command; I can very easily conceive how you could turn to singular advantage a portable steam-engine or portable steam-engines like a farming steam-engine, that should have pumps, circular saws, boring, planing, and mechanical appliances so well known now for converting wood to useful purposes. You might use this machinery for converting timber into gun platforms, and to many other purposes. I was told in the Crimea that our engineers had not timber for platforms in the front, and that they had to procure railway sleepers.

3294. Within what space could you pack instruments of this description; would not they be very unwieldy?—A portable steam engine would travel where a field-piece would go, and with the same number of horses.

3295. (*Sir H. K. Storks.*) Would six horses draw it?—I have no doubt about it.

3296. Would it not be liable to be put out of order by a bad road?—Not more than a gun; but then your engineer sapper would be there, and he would put it in repair.

3297. (*Mr. Stafford.*) You must have an engineer to keep it in repair?—He must be an educated man.

3298. (*Sir H. K. Storks.*) Supposing this machine got out of order, how would they repair it?—There would be no more difficulty than there would be in shoeing a regiment of horses; the engineer smith would use the same means. A portable steam engine could be made so that there should be no piece of it (except the boiler) more than 1 cwt., and you could have duplicate portions; I only throw out the hint as a suggestion; if a great deal cannot be done, a little may.

3299. Do you think from your experience of this portable steam engine, which certainly does go over ploughed fields, that there would be no more difficulty in carrying it about with you than in carrying a gun?—I think not.

3300. It would be very useful as long as it was in practical working order?—Yes; ultimately government sent out a steamer into Balaklava harbour, fitted up as a workshop, and I believe it was found very useful. The engines and machinery employed by the railway workmen were also most useful, not only for the purposes of the railway, but for the army generally. There are horse-machines, used in America, which also would be useful.

3301. Have you any suggestions to make with regard to the huts?—I saw the huts and suffered some inconveniences from them in the Crimea, and the tents also. With regard to the huts, they ought

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to be made in portions that would fit together by screws, and not by nails; they ought to be made in such pieces that one or two men at most could carry any single portion with ease.

3302. That would be in the case of huts being again made in England, and sent out for the use of the army abroad?—Yes; but I think you should always have some huts for hospital purposes; bell tents do not answer well for hospital purposes.

3303. You cannot carry about with an army moving in the field the materials for building huts?—This may be true; but as the case may arise again when huts may be required, the best plan for the most portable and most easily erected hut should be adopted. Those sent to the Crimea were on the very worst plan. The parts should be made to fit together without nailing, as when a hut is once up and nailed, it is simply firewood. I defy the sappers to take it down and move it so as to preserve it for use.

3304. (*Mr. Stafford.*) And the timber split with the nails, did it not?—Yes; it warped the same as a piece of parchment before the fire.

3305. (*President.*) With regard to the drainage of huts, have you anything to suggest?—When we first went out many of the huts were neither drained nor ventilated, but they were set up according to the regulations. Some of the huts at the front were ventilated; but not all on a sufficient scale, and there was no system. One medical officer had tried one way, and another had tried another; they had all found a defect, and had tried to do something. Those huts were covered with an impervious material—"felt," which was impervious to air for purposes of practical ventilation,—and many of the men had banked the sides of the huts up with earth. In the Highland brigade, in one regiment especially, they were shoved into the hill side, and in fact, every hut was a cellar-dwelling of the very worst description.

3306. (*Dr. Sutherland.*) What did they bank them together for?—Because the regulations told them to clear a site exactly the size of the hut, and when on sidelong ground the hut was buried.

3307. Did not they bank them up for fear of their being blown away?—No, I think not; but they would have been blown away if they had not holding down bolts or posts.

3308. (*Sir H. K. Storks.*) You say that the felt was impervious—did not the huts leak very much?—Some of them did.

3309. Where nails were used?—No doubt; the hut that I was under leaked, and I dare say they all did more or less—still the felt was impervious for any practical purposes of ventilation.

3310. (*Mr Alexander.*) You stated that no huts were fully ventilated?—I must qualify that.

3311. When you visited the light division, accompanied by Dr. Sutherland, on the 27th of April, 1855, did not Dr Sutherland acknowledge to me that, with regard to ventilation, everything was perfect, and that you could teach us nothing in the light division?—I think not. You will find in our report that we say that we had found, in one form or other, that ventilation had been attempted to be carried out, and that some of the plans were so good that we had very little to teach on that subject.

(*Dr. Sutherland.*) I must say, that Dr. Alexander's hospital huts were by far the best ventilated in the Crimea, for all practical purposes—they were ventilated enough—so much so, that we never suggested any alteration in his huts, as we did not consider any necessary. So well convinced were we of the excellence of his system, that we have given a sketch of his system, as illustrating the best form that was in use in that country. The system varied very much, according to the intelligence of the medical officers.

(*Mr. Rawlinson.*) I had in my mind another portion of the camp altogether, as in many of the huts there was no ventilation whatever.

3312. (*President.*) If fever occurs in any hut, what course ought to be taken?—According to my own experience, if fever occurs, and if there are healthy men in a hut where there is fever, you must either shift the hut or thin the men, whatever the ventilation may be. A great deal depends upon the subsoil. In the 79th regiment, the huts were on a steep hill side, the regiment below it had little fever, and the regiment above it had little fever, but this unfortunate regiment had one half of its strength down in fever. But there was a clear reason for it, because each hut was a cellar dwelling. They were banked up the sides, and when one of them was cleared, there was as much water running away continuously out of the subsoil as would have filled an inch pipe.

3313. (*Mr. Martin.*) The want of drainage was the main fault?—Yes, and the want of fresh air. Again the men were sleeping near the wet and foul ground, and I think that where you have a damp subsoil, and you must necessarily occupy such a subsoil, the soldier should be raised, if only by a few rude tressels, some few inches from the ground, so that there should be perflation. That would be a great advantage.

3314. (*President.*) You are not acquainted with the barracks at home?—I have not inspected them officially, but I am acquainted with the defective state both of the drainage and of the privies at some of the garrison barracks,—for instance, at Plymouth, at Portsmouth, and at Woolwich, I inspected those towns officially, and there the complaints from the inhabitants as to the barrack privies were very strong. I went into several of them.

3315. Did you find that the complaints were well grounded?—Yes; the privies were merely cesspools—20 or 30 men sitting on a thing like a ladder, and the material remains in the cesspool for 12 months or more. There is a mistake that has been fallen into as to cleansing those places—we are told that they are cleansed by contract at certain intervals, that is to say, they are emptied, and it is presumed when that takes place they are cleaned. But many an empty cesspool is more injurious and foul than a full one. In the full one you have evaporation from the surface, but in the empty one you have evaporation from all the area of sides and bottom.

3316. Which are saturated?—Yes, and giving out foul gases; such a cesspool is in a worse condition for tainting a greater cubical amount of atmosphere. Some effective deodorizer should be used constantly to all cesspools, but especially during the emptying of a cesspool, and to disinfect the foul bottom and sides, as also the foul material taken out.

3317. *Mr. Alexander.* In all those privies you found them badly ventilated and badly lighted, did you not?—Yes, and what is I think quite as bad, the immorality of compelling men to expose themselves in numbers.

3318. (*President.*) In speaking of huts, without laying down any rules, it must be dependent in a great measure upon the negligence or otherwise of the commanding officer or the medical officer, as to the additional comfort and salubrity of them?—Yes, in some measure this will be so. We found one regiment at the front, an example of what may be done,—the 21st. Lord West was the colonel; the hospital huts were paved inside, and they were paved round the outside, so as to be clean and neat. There was also a convalescent seat prepared for the sick soldier on the shaded side of his hut, and they had loose hospital shoes lined with fur to slip their feet into when they were required to go to the rear. I think that if that was general, if a man, without injury to himself, could get out of his sick hut, and see the country and breathe the fresh air, it would be an immense advantage.

3319. This implies that it would be an advantage if the attention of both the commanding officer and the medical officer was more called in the course of their education to subjects of a sanitary character?—I am quite satisfied of that; but in saying this I do not wish my answer to carry with it what may be termed censure, because I really must bear my testimony to the indefatigable zeal of our medical officers in the East. I cannot say too much in praise of the medical

men connected with the army. So far as I knew them they were devoted to their men; they neither feared what is termed "contagious disease," nor a gunshot, nor anything else. I had the misfortune to be wounded, and there was a medical man with me within three seconds, and he was under the same fire that had knocked me over. I was taken to one of the hospital huts and attended to by the medical officer with the greatest possible kindness. There is one thing I would suggest, that in treating the men I think as much as possible the wards of the hospitals should be reduced in size, in making new ones a limit should be put to the size. I can speak from experience that the influence of a number of wounded men upon the feelings of one another must be very injurious.

3320. (*Mr. Stafford.*) About what number do you think would be sufficient for each ward?—If I might have my way I would never exceed twelve in a ward.

3321. (*President.*) You have had a great deal of experience in the working of the Health of Towns Act, have you not found among medical men and among the leading persons in towns quite as great a disbelief in sanitary measures, and quite as great an objection to adopt them as in the army?—Quite.

3322. And greater?—Yes.

3323. (*Dr. Andrew Smith.*) Did you ever find any disinclination to adopt sanitary measures in the army, or that any medical officer was opposed to them?—No, not as a rule; I never met with anything but attention from the medical officers generally.

3324. Admitting that to be the case, you would have almost ascertained whether medical officers had been disinclined by hearing their observations, or did you ever hear any medical officer say that he considered that it was not desirable to carry out to the fullest extent, sanitary measures?—There were two or three instances where medical officers did think or say that the sanitary commission had better have stopped at home. They seemed to think the commission was a censure on them.

3325. (*President.*) Is that as large a proportion as you have found in your experience in towns among civil practitioners who also doubted the efficacy of sanitary measures?—I think I have found it to a large extent among civil practitioners.

3326. (*Mr Alexander.*) Did not you find that the medical men, generally speaking, in the front were alive to the necessary requirements for preserving the health of the troops by sanitary arrangements in the camp and so forth?—Yes, they did, and they complained to the Commissioners very strongly that they had not the power to carry out all that they saw was necessary and all that they had recommended before we went out.

3327. (*Dr. Andrew Smith.*) Did not the same feeling appear to exist elsewhere?—It did.

3328. On the Bosphorus was not the same disposition on the part of the medical officers shown to carry out sanitary measures as in the front?—Yes.

3329. (*Mr. A. S. Stafford.*) Did you have any intercourse with the soldiers?—No.

3330. You cannot tell at all what their feelings were towards their medical attendants?—Yes, I can. As I said before it was my misfortune to be wounded and to come under medical treatment at the front, and I can state that in that division in which I lay, from the officers to the men, the medical officers, if I may use so strong a term, were almost worshipped, idolized.

3331. On the whole can you speak most favourably of the philanthrophy, the kindness, and the skill of the medical men?—I cannot find language strong enough to express what I think of our surgeons. I thought that they were labouring under some disadvantages, and I do not think they are in a right position in a regiment; I do not think that their feelings for their men are consulted sufficiently.

3332. Under these disadvantages they conducted themselves in a manner to win your warm approbation?—They did.

3333. (*Sir James Clark.*) From what you observed, do you not think that a medical officer appointed as a general sanitary officer, would be useful for inspecting? —It would be an immense advantage, and not only a medical officer, but if combined with him there was a practical sanitary engineer officer, a man who had been especially educated, and whose duty it was to examine and inspect and to consult with the different medical officers of divisions having power to carry their requests or their opinions up to head quarters, so that a medical officer might get attention paid to his requirements, when perhaps his own colonel, who had so many other things to think of, could not listen to them.

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3334. If such an officer had been appointed, do you think that many of the evils in the Crimea might have been mitigated or prevented?—I am vain enough to think that the sanitary commission did some good; but I think that all that good might have been done, by specially educated sanitary officers attached to the army. I think that the commissioners did certain good, because they had special knowledge and they also had special power; we had the means of getting the opinions of medical men, and of giving them assistance which they could not get through any ordinary course.

3335. What were your means of getting the evils corrected?—The means were simply our instructions and special knowledge; as, for instance, when we went out to the hospitals on the Bosphorus the ventilation was imperfect and we found the hospital privies disgustingly filthy, and the drains were in a neglected condition, in fact they were in this condition that one medical gentleman said, "if a change of wind occurs we have 50 or 100 men men down with fever in one day, and what can sanitary men do for that?" Now there, simply covering the mouths of the sewers over the Bosphorus, which were exposed when the wind blew right up, and breaking holes external to the hospital walls to prevent the foul smell being driven in, entirely stopped that cause of disease at once, and then we ordered works to provide for full ventilation, which carried off the foul air from the wards, and thereby reduced the amount of foul air, giving the medical men a better chance with their patients. Then we had power to reduce the number of beds, which the medical officer had not; however his hospital was overcrowded he must work and abide the results, however fatal, (even to himself,) he could not thin them.

3336. My question was put chiefly in relation to the camp in the Crimea?—The report details more particularly the sanitary evils we found and the means we took to correct or to remove them. We found at Balaklava the harbour was very much crowded, and that the vessels were in the habit of throwing all their garbage and filth into the harbour, that was stopped; we found that the shore of the harbour was covered with garbage, and we found also that they were reclaiming a portion of the shore of the harbour to make wharfs, and they were doing that with the refuse of the town, and with dead animals, and that we put a stop to. Again, after the regulations had been issued, and we made a regulation that there should be no filth thrown into the harbour, we found one evil result from the effect of our own order. Having been out to the Black sea in a transport when we came into the harbour, with 350 head of cattle that had been on board a week, we found that the vessel might lie there a fortnight waiting orders before the captain could clean his decks, because of this order, and we immediately issued another, that he should bank his fires and run his vessel to sea after he had discharged his cargo, clean his ship, and come in again and wait for further orders. Now, no other person could have issued that regulation if it had not caught our attention.

3337. A sanitary officer would have looked to all that?—Yes; as it would be the duty of a sanitary officer to cause an inspection of all nuisances, to receive reports on all cases of sickness, especially fevers; and at once to investigate the conditions and to devise a remedy immediately. There was a question put to Sir Richard Airey about the cost of engineering

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work, and having as an engineer had to do with large establishments, and having had to do with contracts, I may say that it is extremely difficult to draw the line, because you must have rules and regulations where you have an establishment, either civil or military, and the men get into a routine way of doing things, and you must suffer the consequences. Admiral Boxer in the harbour of Balaklava, with a few dozen jack tars made wharves almost as fast as an old woman could walk, but a military engineer must do everything by rule and square, and it costs guineas where the old admiral's work did not cost shillings, and, under the circumstances, one just as good as the other. I found the same at Sinope; an officer there, Captain Hibbert, made a cattle wharf in about two months, by the aid of local labour and the rudest materials; it would have taken the engineers at Woolwich much longer, and have cost ten times the money. That is the fatality of routine, and I do not see how you are to get out of it, unless rules are relaxed at such times, and commanding officers and other officers are encouraged to think, and make the best of the men and material on the ground. All commanding officers should learn something of mechanics, road-making, well-sinking, timber-converting, &c., so as to be ready at expedients in a new country and under difficulties. Such information may be easily acquired.

The witness withdrew.

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JAMES RANALD MARTIN, Esq., F.R.S., examined.

3338. (*President.*) You have been in the army medical service in India?—Yes, in the Bengal army.

3339. You have stated in a published work that—to the neglect of healthy localities for camps, stations, and cantonments; to the absence of proper structural arrangements in barracks and hospitals; to inattention to the suitable feeding and clothing, neglect in promoting better habits of life, absence of instruction in cooking, hutting, exercising, and bathing; to neglect of change of air and of climate in the remote stages of disease, we must refer the constant and great losses of the British army, especially in hot climates?—Those are, I believe, the principal reasons for the great mortality, especially in hot climates; I mention hot climates because the external causes of disease are there more emphatic than in temperate climates, but I would observe that even in temperate climates those circumstances which are referred to in the question are also very influential in producing disease amongst soldiers.

3340. How have cantonments been hitherto selected?—In India and in all our intertropical possessions they have been selected and fixed upon, and barracks and hospitals have been erected upon them at the instance of the general officer, the commander-in-chief, or the general officer of division.

3341. Without consultation with the medical officer?—Without any consultation whatsoever I believe. I have carefully studied the subject, and I do not remember an instance in which medical officers have ever been consulted on such subjects either in the East or West Indies.

3342. So far as your experience has gone?—Yes, and from all my reading.

3343. By placing neglect in the selection of healthy localities for camps and cantonments in the foreground, do you intend to attach the greatest weight and importance to that as a cause of sickness?—Yes, I do. In tropical climates especially, I believe of all the causes of sickness, neglect in the proper selection of camps and cantonments, and hospitals, is the greatest, and most influential. (*See App.* XLII.)

3344. (*Sir James Clark.*) Do you include barracks?—Yes, as at first stated, barracks and hospitals: all places occupied by soldiers.

3345. (*President.*) In the cases of ill chosen stations, on which a good deal of public money has been expended, can anything be done by art to remedy the defect?—Yes; a great deal can be done by clearing, levelling, and draining, and giving better supplies of water; and those other sanitary measures which are so well understood as preventive of disease among organized bodies of men.

3346. In future, as a means of prevention, in choosing new sites for camps, hospitals, and barracks, what arrangement would you propose with a view to secure healthiness?—I would propose first, in reference to the document that I have presented to you, that there should be in the army, both in peace and in war, a medical officer of health, the same as I recommended to the Health of Towns Commission, which was adopted by them. A medical officer of health for the army, should, I think, be attached to the quartermaster-general's department, and should co-operate with the department of military topography in all instances, both in peace and in war, and where other more important reasons do not overrule him, his views and opinions should be heard and attended to.

3347. It is understood that you have proposed to the Indian Government that an officer of health should be appointed for the service of the Indian army. Will you state the nature of that proposal? (*Presented the following memorandum*): "It is proposed, 1st, that there be attached to the head-quarters, and especially to the office of quarter-master-general, a highly qualified medical officer in the department of medical topography.

"2nd. That the duties of this officer in peace should be to examine and report on the proper sites, and on the sanitary condition of camps, temporary military stations, and cantonments—on convalescent stations and sanatoria—on the mountain ranges and solitary mountains of tropical climates, on the structure and arrangement of barracks and hospitals, and on everything relating to the health and comfort of the soldier.

"3rd. That in war such a medical officer of health should be attached to the quartermaster-general in the field, and be always in advance with this officer so as to be master of the medical topography of the scene of action.

"4th. That where military reasons of imperative necessity do not overrule sanitary considerations, the advice of the medical officer of health should be taken on the sites of camps, whether temporary or permanent.

"5th. That such an officer so highly qualified and possessed of suitable rank and station in the army could not fail to prove of the greatest service in peace and war in all countries, and that there has not occurred an expedition or campaign since the reign of William III., in which such an officer of health would not have saved thousands upon thousands of men. To furnish instances and examples is quite unnecessary, as they will present themselves by the score to the recollection of every well informed person."

3348. You propose that the medical officer should be consulted with regard to the site of all hospitals?—Yes.

3349. The site being determined, what would you recommend as to the proper construction of barracks and hospitals?—I would recommend that the medical officer should be also consulted upon all those matters, space, arrangement, and ventilation, &c.

3350. Do you consider convalescent wards necessary in hot climates?—Yes, I do, in order to separate the convalescent from the sick. I believe it has a moral as well as physical effect; it cheers a man to get out of the sick ward in which he has been seriously ill, and it supplies the *medicina mentis*, which is very influential.

3351. Does not that apply also to hospitals in temperate climates?—Quite so, and the more so when men are massed together suffering from contagious fevers.

3352. Where you have available space, would you always devote one ward or a portion of the space of the hospital to convalescents?—Invariably.

3353. (*Sir James Clark.*) Ought not the convalescent ward to be separated from the hospital?—Yes.

3354. (*President.*) What means do you consider practicable towards securing the benefit of change of air to sick soldiers in hot climates?—I think in most localities advantages are available when governors and commanders agree in having the thing done. On the seaboard of most tropical climates there are very desirable localities, and I may remark here that I observed in Bengal that sending a European for six weeks on a voyage to sea, was more influential in re-establishing his health and preventing the habit of recurrence of fever than six or eight months' residence in the mountain ranges. In tropical climates the influence of mountain ranges, whether continuous or solitary, will be most influential as preventive of illness, but for the cure of disease, and in maturing convalescence, the seaboard would be most influential where you can go to sea, or choose an insular position, which is the better of all. In returning on sick leave from the Burmese campaign, I passed the island of Negrais on the coast of Pegu, which had once been a British possession, and I recommended to the Government of India that it should be fixed upon as the great sanatorium for the European sick of Calcutta and Madras, being about equidistant from both. Circumstances prevented Lord Auckland, the then Governor-General, from entertaining it, although he made a systematic inquiry about it, but it has since been done by Lord Dalhousie, and a great city is going to be planted upon the coast opposite to the island to be called Port Dalhousie.

3355. In the West Indies the seaboard is not healthy I believe?—Where the land is low it is not healthy, but in the highest of the West Indian islands there are good sanatorial positions, in the mountain ranges; and where there are elevations of some 500 or 600 feet on the sea-board, those are generally good localities.

3356. Is there any distinction to be drawn between isolated mountains or portions of a continuous range?—That is a question which has not yet been determined, but I have a strong opinion, theoretically, that a solitary mountain is to be preferred, because it is an imitation of an island surrounded by water, it is better ventilated. I have an impression that that would be better than a spur or a portion of a continuous range of mountains.

3357. Referring to the proposal that you made for the Indian army, was it adopted?—No; Sir Charles, afterwards Lord Metcalfe, at the time it was submitted to him had carried into effect a very large sanitary measure which had been recommended by me for the improvement of the city of Calcutta, and for the improvement of the stations throughout the three Presidencies of India, and that supplemental part of it he had not time to consider when he was succeeded by a new Governor-General.

3358. Was no step taken to remedy those deficiences which you pointed out?—Yes, the city of Calcutta has been under a systematic course of sanitary improvement for 16 years. The other suggestion for the improvement of stations and cantonments throughout India is in operation still. Sir Charles Metcalfe made it the law of India by ordinance.

3359. Was that done by the appointment of an officer such as you describe?—No; that special suggestion had not been adopted, but I have a firm impression that it is fully as necessary for organized bodies of men as for civil communities.

3360. (*Dr. Andrew Smith.*) With reference to the sanitary medical officer who you propose should be appointed in the army and to be attached to the quartermaster-general, would you also propose that he should be independent of the principal medical officer of the army?—He should be entirely independent. I am convinced that the time has arrived when the department for the prevention of disease and that for the cure of disease must be separated.

3361. But there must be a great number of sanitary measures from time to time adopted in an army from occurrences which take place in that army, and which occurrences must necessarily only be known to some certain individuals, and how would he become possessed of the knowledge of what was taking place in the army, if he were independent of the principal medical officer?—An officer so highly endowed as he should be, and possessed of rank and position, should be a confidential sanitary officer, and should be held to be so by the commander-in-chief, and all the generals of division. His independence of the principal medical officer would constitute one of his advantages.

3362. How would he obtain his information as to the number of the sick throughout the whole army; would you have two heads, a sanitary medical officer to whom all medical officers were to send reports, as well as a second medical officer to whom they should also report?—I would have him in correspondence with the head of the medical department in that friendly way which should always take place between associated officers.

3363. Do you not think that that would lead to jealousy and collision?—I think the higher the officer is the more you diminish the chance of collision, jealousy, or petty feeling of any kind.

3364. Should he not be rather a field inspector attached to the principal medical officer of the army for sanitary and other field duties?—I think if he were attached, he should be attached to the quartermaster-general's department, as the medical topographer, the other being the military topographer of the army.

3365. (*President.*) Do you contemplate that he should be allowed to receive reports from the medical officers, as the principal medical officer now does?—I do not see why such should not be required by him in his department.

3366. He would have nothing to do with the treatment of the sick?—Nothing whatever.

3367. (*Sir H. K. Storks.*) He would be the mere medical topographer?—Yes; associated with the department of military topography, which I regard the quartermaster-general's department to be.

3368. (*President.*) He would be the preventive adviser of the commander of the forces?—Yes.

3369. (*Mr. Alexander.*) By visiting the camp he would see what sanitary measures were necessary?—Yes, and report accordingly.

3370. (*President.*) What objection would you have to his being placed as an adjunct to an army in the field, under the authority of the principal medical officer?—I think that for the sake of science it is desirable that the department which shall treat disease with a view to its cure, and the department which shall prevent disease, should be separated.

3371. (*Mr. A. S. Stafford.*) Surely they must have frequent intercommunication?—Yes; but the particular objects of both are different, and I think they should be separated and distinct departments, and they are held to be so in civil communities.

3372. (*Sir James Clark.*) You do not mean to say that in private life the sanitary officer and the physician would be separated?—For organized bodies of men they should be separated; for all communities and cities, such as for the city of London, the medical officer of health is a separate functionary; he does not treat any person in his sickness.

3373. (*Dr. Andrew Smith.*) If your suggestion were adopted the general commander-in-chief would be receiving reports from two officers—from the medical gentleman attached to the quartermaster-general, and from the principal medical officer of the army, and in that case supposing their opinions differed, to which of the two should the Commander-in-Chief attach importance?—I apprehend that in that case he

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would receive his reports from the department that was employed for the treatment and cure of disease, as he does now, but superadded to that, he would acquire, from the proper source, an amount of sanitary information which is essential to the welfare of armies, and to the commander's success.

3374. Suppose a disease of a serious nature breaks out in a brigade now, the principal medical officer would immediately detach an inspectorial officer of the brigade or the division to examine into it, and remedies would be applied or recommended as soon as possible; but in the other case, who would communicate to the sanitary medical officer that such had occurred, and that it was necessary for him to go and see what was to be done?—He, as a superior staff officer, would be every day moving about the camp, and would be cognizant of everything, and in going about he would be in personal communication with all classes of medical officers, as well as with those of the quartermaster-general's department, and nothing could remain unknown to him and he would be the proper referee for the application of the means of prevention.

3375. (*President.*) Do you contemplate that the commanding officer of the troops shall cease to communicate with his principal medical officer as to the means of prevention when he has this sanitary officer attached to him?—Yes, absolutely.

3376. It would then become very possible, would it not, that he might be taking the worst opinion, and never hearing the best?—No, I think it would be a matter of no great difficulty to provide that the medical officer of health should be the highest sanitary officer in the country—certainly the highest in the army.

3377. Has not the chief medical officer in the army a greater interest than any one else in the condition of that army, and in the state of its health?—All medical officers of character have a common interest in the soldier's welfare; but the principal medical officer has such a variety of duties to perform of every kind, that I think it is for the good of armies that he should be relieved of this great sanitary office, and that it should be transferred to a special officer, as it is in civil communities.

3378. Might not a special officer relieve him of all those duties, and have a right of personal access to the quartermaster-general, but still be attached to the department of the principal medical officer, and be under his authority?—He should be in co-operation with him, but my personal impression, on mature consideration is, that he should be separate and distinct. I beg leave to add one remark in reference to what we so frequently hear officers in command speak of, namely, the over-ruling influences of military considerations. At this moment I can hardly remember any consideration, apart from active military operations, which should over rule sanitary considerations—the health of the soldier being the first of military considerations in my opinion; and I am further of opinion that some grave responsibility should attach to the unnecessary sacrifice of health or of life by officers in command.

3379. That is putting aside strategic considerations?—Yes.

Adjourned to Monday the 8th of June.

Monday, 8th June 1857.

PRESENT:

The Right Hon. Sidney Herbert, M.P.	Sir Thomas Phillips.
A. S. Stafford, Esq., M.P.	Sir James Clark, Bart.
Sir H. K. Storks, K.C.B.	J. R. Martin, Esq., F.R.S.
Dr. Andrew Smith.	

President, the Right Honourable SIDNEY HERBERT, M.P.

Colonel Frederick Edward Chapman, R.E., C.B., examined.

Colonel F. E. Chapman, C.B.

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3380. (*President.*) What rank do you hold in the Royal Engineers?—Captain and brevet colonel.

3381. You are in office in London, are you not?—I am commanding engineer in the London district.

3382. Does that give you an opportunity of seeing the manner in which the business is conducted as regards the repairs and construction of hospitals?—In London we have very little to do with hospitals. Most of the hospitals in London are taken up by the Guards, and we have nothing to do with them.

3383. Your district extends beyond London, does it not?—Windsor and Hampton Court. I have a few hospitals.

3384. Can you describe to the Commission the course of a requisition from the principal medical officer to the engineer department for some small repair or alteration required in a barrack?—Yes.

3385. What is it?—If a repair is required to be done immediately, an urgent repair, a requisition is sent by the principal medical officer to the barrack-master at the station, and he inspects the repair and sees what is required, and satisfies himself that it is a repair done by fair wear, and that it has not been done by the troops wilfully damaging the building or a portion of it, and then he forwards it to the commanding engineer.

3386. So that the barrack-master in the first instance exercises his discretion as to the necessity of the repair?—He can hardly be said to do that; he merely exercises a discretion as to whether it has been wilfully damaged by the troops or caused by negligence, or that it ought to be repaired at the expense of the government.

3387. However caused, the repair would be executed?—Certainly; if it was a wilful damage the barrack-master would have it done and charge it as against the troops.

3388. His business is not to see and examine as to the necessity of the repair being made, but as to whether it has been caused wilfully or by fair wear and tear, with a view of charging it to the government or to the individual supposed to have done the mischief?—Exactly so.

3389. When the requisition comes to your department, what steps do you take upon it?—In an urgent case I should send an officer, either military or civil, to examine into the extent of repair required, and to take notes for ordering it from the contractor, and I should then send a written order to the contractor giving him the detail of what was required. If necessary it would be pointed out on the spot by the foreman of the works. The repair is then executed under the direction of the engineer department in the usual way.

3390. Is that a standing contract?—We have always a contract triennially taken for the repairs of all the districts. We charge so much according to a schedule of prices.

3391. Are the works executed by measurement?—Whenever it can be done.

3392. In the erecting of new buildings I can understand how it is that you can measure, but how is it for work done as repairs?—Suppose a part of this ceiling was down, you would measure it at once; so many square feet.

3393. Have you got a schedule of prices for such minute details?—Yes, everything is done by the foot.

3394. Suppose it was the repair of a pipe?—Yes, the same for that and even for junctions.

3395. And for waterclosets?—No, you cannot very well do that; it is generally time and materials.

3396. (*Mr. A. S. Stafford.*) How often is the scale of prices changed?—Once in three years.

3397. Do they hold good for every particular locality?—They are different for every locality; and they are revised once every three years.

3398. (*President.*) The prices are fixed by competition within each locality?—We make a schedule, according to the London builders' prices, and contracts are taken so much above or so much below. We call for tenders.

3399. And the prices of the London builders you have for your own guidance?—Yes; we are much about what it would be by the London trade prices. Our schedules are based upon those.

3400. Do you find generally in the country that the prices are lower?—Decidedly; especially for labour and artificer's work.

3401. (*Sir Thomas Phillips.*) Suppose work to be done for which no price is fixed; how is that adjusted?—We settle it according to the trade price.

3402. Who settles it?—The engineer officer is the arbiter between the contractor and the executive officer on the spot, and they agree on the price, generally speaking, beforehand; and if there is any doubt about it, it is submitted to the commanding engineer, and he decides.

3403. So that the government officer is the ultimate arbiter?—Yes.

3404. You do everything by contract?—Yes.

3405. Not by your own men, the sappers and miners?—Not in London; I have not one.

3406. Do you prefer the system of open tender to having a list of respectable tradesmen?—No. I would sooner have a list of respectable tradesmen, if I could get it.

3407. Do you find, practically, that men who underbid do the work badly?—By the present system I think we get a number of small tradesmen tendering for work, where the large tradesmen, Mr. Cubitt and others, are shut out in consequence of a few small tradesmen putting in smaller prices.

3408. But for small repairs and so on, for which there is a separate contract, those, I suppose, are such as a house like Cubitt's would not engage in?—I think not; it would be very desirable to get a house like Cubitt's to take the whole of the contracts for a district. You would have only one man to deal with, whereas now I have a dozen.

3409. Who draws up the contracts?—The contracts are all made by the director-general of contracts.

3410. Who superintends the execution of the work?—The engineer officer, assisted by the civil branch.

3411. What is that?—The clerks of the works and foremen.

3412. Do you send one upon every occasion, for every small repair?—Very nearly. We do not always have repairs come in every day; we try to keep them for once a quarter. The barracks are always inspected once a quarter by the engineer officer.

3413. So as to concentrate the repairs under the superintendence of one man, as much as possible?—Yes.

3414. (*President.*) Does not that produce a great deal of delay in an hospital, for instance?—Yes; sometimes in this way. After the engineer officer and barrack-master have gone round once a quarter to inspect, the following day some more requisitions will come in for other repairs, which, through carelessness on the part of the people occupying that hospital, had not been brought before the notice of the officer of engineers at his inspection. We go round with a long list furnished by the barrack-master, and the officer of engineers inspects every item, and adds anything that he sees necessary; but there are many things that might very possibly be missed by the engineer officer.

3415. You depend upon the medical officer for that?—Certainly.

3416. Does he accompany the barrack-master?—Sometimes he does and sometimes not.

3417. Because the barrack-master can only know what things have been represented to him?—He is bound to know where every individual repair is required.

3418. He does not originate any complaint in the hospital? he only deals with those brought under his notice by requisition?—No; those requisitions are made by the officer in charge, and generally speaking it is done by the quarter-masters of the regiments.

3419. But, referring to the general hospital at Chatham, how is it?—There I should say that those lists are made out by the senior hospital serjeants, and sent in by the principal medical officer.

3420. (*Sir H. K. Storks.*) Is the barrack-master required to make an inspection?—Yes, once a month.

3421. (*President.*) At that time any repairs which had accumulated during the month would be brought under his notice?—Yes.

3422. You have stated what you do with respect to alterations when they are slight, and repairs of no great importance; where there is a new erection required or a work of considerable magnitude, what takes place then?—Where there is a new erection required, probably the principal medical officer would make a requisition on the director-general of the medical department for the new work or the extensive alteration required. The director general would then communicate to the inspector-general of fortifications, who would forward the requisition to the commanding engineer of the district with an order to prepare plans and report an estimate; and when those plans are ready, with the estimates, they would be forwarded to the inspector-general of fortifications; I conclude that he would confer with the director-general of the medical department, and when they had settled between them the nature of the building, or whether the plans would answer, they would be submitted to the Secretary-of-State for War, and if the Secretary-of-War approved of them, an order would then come to the commanding engineer either to call for tenders for the erection of the building at once, or if funds are not available to bring them forward in the next year's estimate.

3423. You referred to the regimental hospitals within the barracks, is the process the same?—Yes, except that the requisitions are signed by the commanding officer of the regiment.

3424. He makes the application instead of the medical officer in charge?—Yes, inclosing the medical officer's requisition in all cases.

3425. (*Sir H. K. Storks.*) Are the commanding officers required to give any report containing suggestions for improvements in barracks and hospitals?—Yes, every year previously to the formation of the annual estimates.

3426. At all the stations?—Yes.

3427. What becomes of those reports?—They accompany the estimates submitted to the Secretary-of-State for War.

3428. Are the suggestions or requisitions carried out?—If they are not carried out the commanding engineer's reasons are always supplied.

3429. Supposing the commanding royal engineer or inspector-general of fortifications approves of a suggestion for an improvement in a barrack or hospital, does it follow that it will be adopted?—No, not if the inspector-general approves of it; it is a finance question then.

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3430. Then it goes to the Secretary-of-State ?—Yes.

3431. (*President.*) In the first case you mentioned, that of an ordinary repair, does this process produce delay ?—There is delay if the repairs are not noticed; as I said before, if the inspection is made to-day and another requisition comes in to-morrow that ought to have been foreseen, then there is a great deal of delay.

3432. Or that could not have been foreseen ?—Yes, there must be some delay then.

3433. That is, it will be delayed till the next inspection of the barrack-master ?—Not with a hospital; with a hospital we generally attend to the requisitions as they come in, and have them included in the next return, so as to be a voucher to cover our expense.

3434. What causes the delay; has it to go through a number of departments ?—It has to go from the surgeon to the barrack-master, and then to the commanding engineer.

3435. From him does it go further ?—Then he has to measure and make out the details for ordering this work.

3436. (*Sir H. K. Storks.*) Would he execute it upon his own responsibility ?—Yes; in a small repair we have an item in the estimate for it.

3437. Supposing a very offensive drain in a barrack, that required a considerable outlay to cleanse it, would the commanding royal engineer, when the requisition arrived with him, consider himself authorized to execute it ?—Not unless he had funds to pay for it.

3438. (*Sir Thomas Phillips.*) Suppose he had not ?—Then he would report the expense to the inspector-general of fortifications.

3439. What would the inspector-general of fortifications do with it ?—Then it would go to the Treasury, through the War Office, if over 200*l.*

3440. (*Sir H. K. Storks.*) And then what is done ?—I think that for anything over 200*l.* you go to the Treasury.

3441. (*President.*) Do you see any means of altering the process ?—I am not prepared to say that I do know of any.

3442. Could you not simplify the process without interfering with the financial check ?—I do not think that you could very well simplify it.

3443. (*Dr. A. Smith.*) Might it not be simplified in this way; that there should be a certain amount of money allotted every year for hospitals only, and that that fund should exist and remain solely for hospital purposes ?—We have always had a contingent item for hospitals; there is always a certain allowance for hospitals every year.

3444. Specially for hospitals ?—Yes.

3445. Unconnected with barracks ?—Every item required for a hospital is taken up in detail for it in the annual estimates.

3446. Suppose that a certain amount, such as is shown to be required, shall be available to be expended upon hospital repairs during the current year, there would be no necessity for correspondence at all, if the money was not exhausted ?—Yes; there is no necessity for correspondence as long as you can keep within the money allowed by Parliament. It is when there comes an extra thing, such as a large drain to be cleaned out.

3447. (*President.*) But there is still correspondence, though there is not money to be spent; the medical officer cannot get a repair effected without making a requisition upon the barrack-master who writes to the engineer ?—Yes. If you choose to put a special item at the disposal of the commanding engineer to cover extra contingencies it might simplify the thing, but then it would run up your estimates enormously by that means.

3448. (*Dr. A. Smith.*) At the present time there is no sum of money set apart for hospitals; hospitals and barracks are included in the same grant, and if the barracks require a greater expenditure the hospitals necessarily suffer ?—I think it is just the other way. I know that, so far as my experience goes, whenever there has been money available, we have always spent it first on the hospitals.

3449. (*Mr. A. S. Stafford.*) And you have let the barracks wait ?—They must wait. If we get a requisition from the surgeon, saying that so and so is absolutely necessary, if we have the money we do it.

3450. Would there be any advantage in the distribution of the vote between the hospitals and barracks, giving a certain sum to either ?—I do not know. In the present case we might sometimes have a saving on the barracks that we can apply for the hospitals.

3451. (*President.*) And it might be *vice versâ* ?—Yes; but in the other case, if you only allowed a certain sum for hospitals, when that is expended our hands would be tied for the remainder of the year.

3452. (*Mr. Martin.*) Meanwhile the sum set apart by the Government for contingent repairs for any one hospital or barrack amounts to 200*l.* a year, and no more ?—No; if you want any specific item done that has not been foreseen in the grant of Parliament, and not in the estimate.

3453. (*President.*) If it does not exceed 200*l.*, you can execute it ?—The inspector-general may order it, not the commanding engineer. Suppose I have a contingent item for the repair of hospitals in London, amounting to 200*l.* a year, and suppose a large drain required cleaning out, at a cost of 150*l.*, I could not expend that 150*l.* on my own authority, for I should only have 50*l.* left to keep the remainder of the hospital in repair. I should be bound to apply to the inspector-general of fortifications for an extra sum.

3454. Your impression is, on the whole, that in the clubbing together those two votes it more frequently occurs that the money originally intended for barracks is diverted to hospital purposes, than that the money that is intended for the hospital is diverted to barrack or fortification purposes ?—I should say so, certainly.

3455. Could you get from the War Department a return showing the manner in which the money has been spent upon both ?—I should doubt if you could.

3456. Could you from the engineers' department ?—It would take some time; you must hunt through the whole of the bills for any twelve months, that you might call for and separate them all.

3457. (*Sir Thomas Phillips.*) Do not your accounts which are sent to the department distinguish what you have spent upon the hospitals, and what upon the barracks ?—No. Every item is distinguished, but our incidental would not show it; our incidental item is for all the different trades; they are sent in in one bill.

3458. There is no analysis—no division of it ?—We could make an analysis by going through the details in the district office; they are all retained there.

3459. I understand that the report is made of the money required for the work to be done ?—It does not always come up to the estimates for the district, framed on the requisition of the medical department there; I dare say if you took the hospitals throughout Great Britain you would find that there was ten times as much estimated for as is allowed in Parliament.

3460. (*Mr. A. S. Stafford.*) They are cut down at head quarters ?—Yes.

3461. (*Sir T. Phillips.*) I mean this, that Parliament at last simply sanctions the expenditure of a certain sum which is settled with reference to a certain report of the work then required to be done; it is not a prospective provision ?—It takes both cases in.

3462. Prospective as well as retrospective ?—Yes.

3463. How is the prospective vote framed—with reference to what data ?—I do not quite understand the question.

3464. Say that there is wanted 500*l.* for a hospital, that it is now needed, but you also say, that Parliament sanction the expenditure of 700*l.* or 800*l.* under the idea that there would be a further expenditure required during the year; is that so or not ?—The

way an estimate is made, is this ; requisitions are sent in for things known by the people occupying those hospitals to be necessary.

3465. At that time necessary ?—Yes ; a commanding engineer goes round, and sees that a certain roof will only last another year, and he provides for that also, so that it is not only the repairs absolutely necessary then, but what may be required after another twelve months.

3466. Suppose that Parliament came to a vote in May, in reference to a certain estimate then supplied, and suppose that an engineer officer goes round in August, and finds that there has been between May and August an injury done in various respects, or certain things have presented themselves as necessary, in what shape is provision made for that subsequent want ?—In the case of a storm, for instance, a special report and estimate would be forwarded.

3467. And that though there has been no provision made by Parliament for it, upon the authority from the Treasury ?—Yes, as soon as they grant the money.

3468. (*President.*) At the end of the year, if, on account of that extra expenditure, the vote was exceeded, application would be made to the Treasury to sanction the saving upon some other head, to be turned over to the excess upon that one ?—Yes, that is quite the case. There is vote 12 for this year ; there may be a good number of buildings within the year. If they could not be completed under vote 12, and the money could not be paid on the 31st of March, the money would be a saving. Then there are a great number of unforeseen cases, like those that have been instanced, in which the Treasury have to provide the money, and they charge it against vote 12, the aggregate being voted by Parliament.

3469. (*Sir Thomas Phillips.*) It being of that class ?—Yes.

3470. (*Dr. Andrew Smith.*) But is it not the usual practice as to hospitals, about three months previously to the army estimates being prepared, to send round to all the general hospitals for the principal medical officers to state what they consider is likely to be necessary during the current year for the repairs of the hospital ?—Yes.

3471. And then is it not the practice to send that in, with any additions that the commanding engineer may make to it ?—Yes ; that is, a requisition is sent in to the commanding Royal Engineer, who makes any additions that he likes, which he forwards, and in reporting on the different items of the estimates he alludes to the requisition of the principal medical officer for what is required to strengthen his report.

3472. Does it not very frequently happen that what the principal medical officer requires, and the estimates show will be necessary to meet the expense of the year, are not given by a half ?—You may say by one-fourth.

3473. (*President*) Are you aware of the practice in the Naval hospital,—for example, at Melville hospital, at Chatham,—that the medical superintendent of the hospital writes up to the officer corresponding to the director general of the army, Sir John Liddell, and gets his sanction to have such and such a work executed, which he then has executed under contracts made by himself ?—I am not aware precisely of the method in the navy.

3474. (*Dr. Andrew Smith.*) Looking at the service, do you see any reason why such a course should not be followed in the army ; would the service suffer by it ?—I think that the medical officer in charge of the hospital would be rather going out of his line if he had to superintend, and to judge whether the repairs were properly done or of good materials.

3475. Supposing a person was appointed for that purpose, a professional man, who would carry out the repairs, and be in every way responsible that they were properly executed, would any disadvantage to the public service result from that course ?—I cannot answer that ; I do not see that there would be any advantage in it over the present system.

3476. Would there not be this advantage, supposing the principal medical officer now at Chatham found there was anything very necessary to be done, and he was anxious to have it done, then the commanding engineer, with every desire to do what was wanted, if he had not the money, would require to correspond with the head-quarters, and the head-quarters would most probably have to correspond with him again, and then his second explanation would come ; then they would correspond with the Minister of War, who would have to correspond with the Treasury, and during this time a great deal of mischief would result, say at Fort Pitt ?—You would only get rid of one department after all.

3477. If a certain sum of money was appropriated annually for hospital purposes, taking the last ten years as a guide, and if that sum was estimated in Parliament as being probably required for 1858–1859, and was put into the hands of Sir John Kirkland or any other authority that the Government fixed upon, and that the principal medical officer, aided and assisted by a clerk of the works, or whatever his appointment might be, went and made all necessary repairs when required, so long as he had money, it would expedite very much the repairs and there would be no correspondence wanted then ?—There is none wanted now, if you have the money.

3478. (*President.*) But there is correspondence necessary between the department for whom it is to be executed and the department by whom it is to be executed?—There is not much loss of time by that.

3479. (*Dr. Andrew Smith.*) It appears to me that the two are lumped together ; that the barracks and hospitals are not virtually separated at present. If there is a commanding engineer, say at Colchester, who is influenced a good deal by the commanding officer at Colchester, he might supply those things required for the barracks that he perhaps would not do for the hospital. There is an influence, is there not, that can be exercised, and more money may be expended upon the barracks than is to the advantage of the hospital ?—I do not admit that the commanding engineer is influenced in that way, but in nine cases out of ten it is the other way, if any influence is brought to bear upon it.

3480. (*President.*) Should you not say that the officer responsible for the appearance of certain buildings is more likely to favour them than buildings belonging to another department, and for which, when they are inspected, he is not held responsible ?—The engineer officer takes just as much pride in keeping up the appearance of the hospital as of the barracks.

3481. He is not there when the hospital is inspected, is he?—No, nor is he when the barrack is inspected.

3482. Is he not ?—No ; but if he is wanted, it is just as much his business to be there. Do you mean at the annual inspection?

3483. At any inspection by a general officer ?—He can always send for the engineer officer.

3484. Practically, have not many more barracks been built in England in the last 10 years than hospitals ?—I cannot say. I should say that there has always been a hospital built with the barrack.

3485. Wherever there has been a regimental barrack ?—Yes.

3486. (*Dr. Andrew Smith.*) With reference to regimental hospitals, would you say from your experience that the hospitals built for regimental hospitals were always equal to the purpose for which they were built ?—No, because you have changed them about so now. If you take Chatham, for instance, you have taken Fort Pitt, which was a barrack, and fitted it up as a hospital. You have taken the Brompton hospital, which was the ordnance hospital for a small number of men, and you have made it hold a large number of men, by putting an extra story on ; but your premises are not in proportion at all with the size of the hospital.

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3487. (*President.*) In those two cases the hospitals have been treated as a secondary service, and they have not had buildings suitable to their wants?—It has been on the saving principle.

3488. (*Mr. Martin.*) There is no fixed or standard plan?—In those two hospitals there certainly is not. They have adapted those buildings at a cheap rate, as a makeshift. I look upon both as makeshifts.

3489. Though they are the chief military hospitals of the station?—Yes. One of them, the Brompton one, was a very nice little hospital for the force, as I recollect it 20 years ago, an Ordnance Hospital, when we had about two companies of sappers down there, and a detachment of artillery, and one surgeon lived on the spot.

3490. (*Dr. Andrew Smith.*) But with regard to our regimental hospitals, the regiments being scattered all over England, do you think that the hospitals are at all such as they ought to be, considering the strength of the corps to be accommodated in those barracks?—I do not know anything about the hospitals in England; I have had very little service in England; except in London and Chatham.

3491. (*Mr. Martin.*) When you have original errors to contend with, such as adapting a public or a private residence for a hospital, is it not a matter of great engineering difficulty to make them good hospitals afterwards?—Yes; if you adapt one building for a purpose that it was never intended for, you are sure to make a mess of it.

3492. You have always original errors to contend against?—Always.

3493. (*Sir Thomas Phillips.*) You spoke of Brompton, how different is the scale upon which it is now used as a hospital?—It takes the whole of the provisional battalion, if I recollect rightly, by an additional story being added to it.

3494. As I understand you, the space of ground attached to the hospital has not been enlarged?—The outbuildings, waterclosets, offices, and those sort of buildings remain the same. It was a very nice little hospital originally.

3495. (*President.*) It is not a mode of construction for a hospital which you would adopt now?—Certainly not.

3496. As to its plan?—No, certainly not.

3497. You state that the estimates are submitted to the director-general before they get the approval of the Secretary of State?—Yes.

3498. Afterwards, if the whole amount of the estimates is objected to, the practice of the Treasury is to send them back to be reduced, is it not?—I believe so.

3499. Through whom is that reduction effected?—I believe that is done at the inspector-general of fortifications office.

3500. And probably the inspector-general of fortifications goes to the Chancellor of the Exchequer and explains what items he cannot give up?—I think that is so.

3501. You do not know whether that is the case with the director general?—I do not know.

3502. Are you aware whether the director-general also is consulted with regard to items which affect the hospital expenditure, and which are contained in the gross estimate of the inspector-general of fortifications?—I am not aware of that.

3503. (*Sir Thomas Phillips.*) Do you in fact know that items which are regarded as essential by the inspecting officer are disallowed on financial considerations?—Our estimates are generally very large indeed. I believe the hospital estimates last year were something like 2,000,000*l*.. and I think you will find it is not above a fourth of that.

3504. I want to know whether the disallowance proceeds upon a judgment that the work is not necessary to be done at all, or for financial reasons which render it inconvenient to undertake the expenditure?—I suspect it is for financial reasons, generally speaking; every year our wants are much greater than are supplied.

3505. (*Mr. Martin.*) In proceeding to construct a new barracks or hospitals, should you consider it advisable that the barrack and engineer departments should have before them standard models and plans of the best known buildings of the description mentioned?—I think it would be very advisable that in a case of that sort for new buildings or hospitals, some plans or models of a particular system should be submitted for them to work by, as near as the ground would admit.

3506. For the purposes of estimates and comparison?—Yes.

3507. Would not the placing of such models in barrack and engineers' offices at head quarters tend greatly to the perfection of plans for future buildings, it being understood that models of all improvements shall from time to time be presented by the authorities?—It is hardly necessary to have models; plans might be very useful.

3508. Would not such models be as useful towards perfecting the plans of public buildings as towards perfecting fortified works?—I suppose they would.

3509. (*President.*) Can you state whether or not medical officers are consulted as to the sites of hospitals or barracks?—I believe they are.

3510. Are they consulted at all as to the plan?—I should consult the medical officer as to the plan of a hospital, but not as to a barrack.

3511. Do not you think it is the business of the medical officer to keep the men in health and to prevent their getting ill?—Yes, but if you have a good site, I think that the engineer officer and the military officer are quite able to determine on the plan of a barrack without any assistance from medical men.

3512. Do you think that the existing barracks are constructed with sufficient regard to ventilation and drainage?—Not the old barracks, certainly not.

3513. (*Sir H. K. Storks.*) Would you not consult the medical officer about ventilation and drainage?—No, I think that is an engineering question.

3514. (*Mr. Martin.*) You regard them as engineer's questions?—Totally. As to ventilation, we know that there are 50 different opinions how that is to be done.

3515. (*President.*) The result is very often that it is not done at all;—I think that we give some ventilation now; but take half a dozen people in a room, I will undertake to say that they will not agree on the subject of ventilation.

3516. (*Mr. Martin.*) As a question of science, true ventilation is still a desideratum with engineers?—Of course it is.

3517. (*President.*) With soldiers you have this difficulty, that the ventilation which depends upon open windows, it is always in their power to shut out?—They always will shut out even the ventilation that you give in walls or in any way, they will stop over all the ventilators during the winter with pasted paper, or something of that sort.

3518. Do you recommend artificial ventilation in addition to the windows and doors?—I would prefer having the ventilation exclusive of the windows and doors, and altogether independent of them.

3519. What is your notion as to the best principle of ventilation?—I prefer carrying up the ventilation by hollow flues in the walls.

3520. Would you have gratings admitting the air underneath?—Yes.

3521. Do you have any through the beams?—Through the rafters; between them in all cases, and also taking ventilators from the centre of the roof as well as the sides, and taking off the whole of the foul air through those tubes conveyed in the main or party walls of the buildings.

3522. You have a hollow rafter stopped in the centre, so that the wind blows in always from the windward side, and is not carried through to the leeward?—That is the principle that they have in some of the barracks.

3523. Does that plan answer?—It does if you pay attention to it, but it is nobody's business to do it.

3524. What attention does it require? — You require to have one side left open—the windward side.

3525. But if left open at both ends, but closed in the centre, then the wind will only come in one way? —Yes, and out the other.

3526. No, being stopped, it comes into the room? —It may be a good plan, but I prefer the air coming in, not directly from the outer air, for you get such a tremendous draft, and they would immediately stop up the ventilation.

3527. You have inspected the Chelsea Asylum, have you not, with a view to convert it into a barrack?—Yes.

3528. Did you observe the cooking apparatus?— Yes; I think it is very good.

3529. In what respect is it better than the existing one?—You have large boilers there, and you bring down a certain number of messes—I think I am right in saying so—and you place them in, and they are cooked and then taken away to the messes at once.

3530. (*Sir Thomas Phillips.*) In what does the superiority consist?—Everything is so simple, and it is easily managed.

3531. (*President.*) It gives you the means of various modes of cooking; you can bake and fry, can you not?—Yes; bake as well as boil.

3532. And fry?—Yes, I suppose they can.

3533. How is it as to the consumption of fuel?—I do not know.

3534. Should you recommend that in a barrack rather than the existing system of coppers?—The soldiers like the existing system of coppers.

3535. Why?—Each company has a couple of boilers handed over to it, in one of which they cook the potatoes, and in the other the meat. Not long ago we tried another apparatus, Captain Grant's, for cooking, but the soldiers did not like it at all.

3536. (*Sir H. K. Storks.*) Do the men like the cooking only in one way?—What they like, is cooking by gas; it gives no trouble. They like to have their meat baked certain days, and roasted.

3537. (*President.*) Do not they like the present system, because they get some of the fuel?—Yes, they get a good deal of fuel.

3538. They save the fuel, and then distribute it to the married men, do they not?—Yes; I was in this district 14 years ago, and we fitted up a steam apparatus like that at Chelsea, in the Wellington barrack, and one battalion of the Guards liked it uncommonly, and they cooked for the whole regiment with two men attending one fire, but the next battalion would not have it at all.

3539. (*Mr. Stafford.*) Was it merely boiling?— Yes, by steam, and it was pulled down.

3540. (*President.*) Were there any means of baking? —No, I think not; and the next regiment that came in had it pulled down. The old coppers were substituted, and there they are now.

3541. (*Sir H. K. Storks.*) How did they get pulled down?—With a little pressure from the authorities.

3542. (*Mr. Stafford.*) Did the men protest against it?—Yes; they could not get any spare fuel for the married people, and that apparatus was pulled down and sold.

3543. Has one battalion more married men in it than the other?—I do not know that.

3544. (*Sir H. K. Storks.*) Under whose authority was it pulled down; was it under the authority of the Inspector-General of Fortifications?—The Ordnance must have sanctioned it on the representations of the commanding officer of the guards.

3545. (*Sir Thomas Phillips.*) You spoke of a roasting apparatus at Chelsea; is that supplied with gas?—No.

3546. (*President.*) As the result of your own experience, should you say that buildings constructed by your department are cheaper or dearer than those done ordinarily by contract?—I should say that they are cheaper.

3547. It has been stated to the Commissioners that at Chatham some things have been estimated for, such as painting and so on, by engineer officers, which tradesmen of Chatham offered to do for less than a third of the amount?—Very possibly, by putting inferior materials in with the painting. Instead of putting linseed oil, they put any stuff they can get hold of.

3548. In cases where your work is dearer you think that good results from the use of the best materials?—Yes.

3549. Do not you sometimes go too far in that respect?—I do not think we do.

3550. In building the different military chapels of late years, are you aware that when done by contract they have been done cheaper than by the engineers? —Generally a specific contract is taken under our estimate, and sometimes it falls over; it is according to the market price of materials, the labour being much about the same.

3551. In cases where it is dearer you attribute it to your more solid construction and so on?—Yes; our estimates are all based upon actual measurement, and the prices taken at the schedule prices on the spot are framed from experience on the spot, and therefore there cannot be much mistake about the estimate.

3552. (*Sir Thomas Phillips.*) Do you ascertain your quantities yourself?—Yes, every single thing is brought up.

3553. (*Sir H. K. Storks.*) What means do you give the men for washing themselves in the new barracks which you construct?—The water is laid on in large washing rooms. I have just been completing some barracks with washing rooms in the basements and baths.

3554. In the London barracks?—Yes.

3555. What barracks are those?—The Wellington barracks.

3556. Is it only so in the Wellington barracks?— I think in all the barracks in London. I have just completed the Wellington barracks, and they have a very large supply of water.

3557. In other respects in the barracks both at home and abroad there is no convenience of that sort? —In all barracks, both at home and abroad, there are ablution rooms. I think the order came out in 1841, and they have always had them since that date.

3558. (*Mr. Stafford.*) Is that the case in Ireland as well as in England?—I do not know.

3559. (*Dr. Andrew Smith.*) Have you anything to do with the Hounslow barracks?—Yes.

3560. Do you know why there was an objection to give an ablution room at those barracks, compelling the men to continue washing in the dead-house?— The men do not wash in the dead-house. There was a dead-house built there before I came to the district, two years ago.

3561. It was on the ground of expense, was it not? —I do not know; I cannot speak to that.

3562. (*Sir Thomas Phillips.*) Do you say that there is an ablution room there?—I say that the men do not wash in the dead-house.

3563. You do not know whether there is an ablution room there?—As well as I recollect, there is. I believe there is an ablution room in every barrack in this district, in London.

3564. (*President.*) In the evidence that has been given before this Commission, Sir Richard Airey was asked these questions:—"Do you think that the repairs might be done more easily and more rapidly by hiring labour, than by employing engineers for the barracks and hospitals? On the spot? Yes, certainly.—What is the reason that everything the engineer seems to do is so dear?—I really do not know. There is a technicality that attends all engineers. I do not understand it.—Is what they do more lasting? Perhaps it is of a more permanent nature; it is taken more *en grand*, and there is a want of simplicity about it. I recollect an instance; I was sent with a strong force into the county of Leitrim. We were encamped, and

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it was likely we should remain there some time. I wrote to Sir Edward Blakeney, stating that the men had no means of cooking, and the weather was extremely wet. We were near the famous Ballynamuck, on a very swampy bit of ground, and I wanted very much to get some means of cooking independently of the common camp kitchens, which were deluged with rain; and I proposed to Sir Edward Blakeney that we should be allowed to construct a cooking apparatus with two boilers, in the usual barrack way. An engineer officer came down; there was an estimate and a specification, and then it had to be submitted to contract, and in about two or three months I should have had it done, at a cost of 90*l.*; but the end of it was, that I said it was of no use doing it; we should not be that length of time there, and it was given over. I got it done by a man from the town of Mohill, and the cost was 17*l.*, and something less than 18*l.*"—It could not have been the same article; it was a make-shift.

3565. That would apply where a thing is wanted for a temporary purpose; the engineers always construct too solidly, do they not?—I do not think so. If we know that the requirement is only of a temporary nature, we treat it accordingly. At Hounslow there were stables required for 100 additional horses, and we merely put up some little hut stabling and covered it with felt, and there they are now.

3566. (*Mr. Martin.*) But the disposition of the engineer officer, if left to himself, is to do the work well?—He is bound to do it well always. Whether you are making a small work, or a large one, the workmanship ought to be done well.

The witness withdrew.

Adjourned to Wednesday next at One o'clock.

Wednesday, 10th June 1857.

PRESENT:

The Right Hon. SIDNEY HERBERT, M.P.	Sir JAMES CLARK, Bart.
Sir H. K. STORKS, K.C.B.	J. R. MARTIN, Esq., F.R.S.
Dr. ANDREW SMITH.	

President, the Right Honourable SIDNEY HERBERT, M.P.

Commis.-Gen. G. Adams, C.B.

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Commissary-General GEORGE ADAMS, C.B., examined.

3567. (*Chairman.*) What office did you fill in the army in the Crimea?—I was senior deputy commissary-general in the Crimea up to the 22d of June 1855. I was afterwards with the Turkish contingent, and then I succeeded to the charge of the department in the East.

3568. Were you with the commissariat from the commencement?—Yes, in Bulgaria.

3569. The commissariat issues the rations to the hospitals as well as to the troops?—It does.

3570. Is that invariable?—Invariable. There may have been some articles of supply purchased down at Scutari by the purveyor, but I think, generally speaking, they are all supplied by the commissariat.

3571. You are now speaking of the practice in war?—Yes.

3572. At home does the commissariat supply the hospitals?—At home the commissariat is not generally employed.

3573. The commissariat are supplying the ration now?—Yes.

3574. Does that apply as well to hospitals as to the troops?—It may to regimental hospitals.

3575. Do you think not to general hospitals?—I think not. I do not think the practice is so now in the camp at Aldershott.

3576. (*Sir H. K. Storks.*) But in the colonies, how is it?—In the colonies the commissariat furnish everything.

3577. (*Chairman.*) Was there any distinction made in the late war, to your knowledge, with regard to the supply of the ration between general and regimental hospitals?—Not that I am aware of. I think they all obtained their supplies from the commissariat; they did with the army in Sicily, with which I was serving.

3578. There was a general hospital at Balaklava?—Yes.

3579. Was that supplied by the commissariat?—Yes; except such articles as were sent out to the purveyor from England.

3580. Did you supply it to the purveyor, the purveyor then accounting for it, or how was that?—No; it was frequently issued to the surgeons at the hospitals, and these were afterwards taken up by the purveyor, who gave a general certificate for them, and paid for them according to the established practice.

3581. Therefore an account passed not only between the purveyor and the government at home, to whom he is accountable, as well as the commissariat officers, but an account between the purveyor and the commissary?—Yes, a nominal account; it was an account of the cost of the articles. The commissariat officer advanced the purveyor money to repay the amount of the articles purchased or issued from the commissariat magazines.

3582. Do you think that that is necessary?—Certainly not.

3583. You could dispense with that?—Yes.

3584. Do you think that the best way of simplifying the matter would be to make the purveyor's branch a portion of the commissariat?—I see no objection to that; it derives nearly everything from the commissariat abroad.

3585. Would it be an advantage over the present system that the purveyors should be commissaries, but a separate branch of the commissariat devoted to to the purveying service of the hospitals?—Yes, I think so; I see no objection to such an arrangement.

3586. Do you see any call for a change?—I think it would simplify many matters. For example, the purveyor attached to the Turkish contingent made out an estimate for a very large sum of money, 70,000*l.* for five months, which I was satisfied he could not require, but which I was called upon to provide. I could not get an explanation from him in time to correct his estimate, but if he had been attached to the commissariat he could have been immediately required to show upon what grounds he made his calculations.

3587. (*Sir H. K. Storks.*) You could not require him to furnish you with that information?—I could not; I must go to the General to get it, whereas if he had been under my orders, or attached to me, I could have readily obtained it.

3588. (*Dr. A. Smith.*) Would you propose that the commissaries should take the place of the purveyors, and that they should be liable to be removed from the duties of the hospitals?—No, I would keep them specially attached, and particularly to general hospitals.

3589. (*President.*) At the same time there would be this advantage, that they would cease to be so much under the control of the medical officer?—I think not; those attached to the general hospitals should be under the control of the medical officer.

3590. If the purveyors formed part of the commissariat, would there be the same facility in dismissing or removing a man that there is now?—Certainly.

3591. Would it not be necessary, in order to obtain the removal or dismissal of an officer, to apply to the commissary-general?—It would be necessary certainly. It is the rule of the service, that you cannot dismiss an officer without bringing him to a court-martial. You must go through certain established forms.

3592. Still the representation of the medical officer would be looked upon more as an accusation against a member of his department, and would he not be rather apt to try the case as between a man belonging to his department, and the head of another department?—No, I do not see that at all; I do not think that any officer would favour another who had not done his duty.

3593. Are you aware that in the Peninsular war, under the Duke of Wellington, the general hospitals were put entirely under the purveyors, and the purveyors for them became commissariat officers?—No; I was not in the Peninsula.

3594. In Sicily that was not done?—Not in my recollection. Where a general hospital is stationed you generally have a large depôt, and an officer of high rank in the commissariat, and the duties are of great magnitude.

3595. I suppose you see some practical inconvenience in the purveyor at the base of operations performing the same duties that the commissary is doing in the front?—He would be specially attached to the hospital, and have nothing to do with the other extensive duties of the commissariat service; he could not possibly perform them.

3596. If a general hospital were supplied as to the rations by the purveyor, as the regimental hospitals are supplied by the commissariat, there would be two systems for one purpose?—Yes, but I do not see any necessity for that; the regimental hospital should be supplied from the same source as the general one. The regimental surgeon requires bread, meat, rice, and sugar, which are provided whether the men are in hospital or not. We look to the number of men constituting the army generally, and provide for the whole of that number.

3597. But you do not know how many of those men are efficient, and how many are in hospital?—No, we provide for the whole.

3598. The division upon the issue does not come under your cognizance?—Not necessarily.

3599. Can you put in a return, showing the manner in which the bread and meat are drawn?—Yes.

3600. The purveyor by his instructions can always purchase, if he chooses, meat at an enhanced price above your contract price, can he not?—Yes; we make a contract for him, and we generally pay a little more for the hospitals, because they require certain portions of meat which are selected for them; a regiment takes the whole beast.

3601. (*Mr. J. R. Martin.*) But the contracts are always made by the commissariat department?—Yes, for everything.

3602. (*Sir H. K. Storks.*) For instance, if you wanted a piece of timber?—Yes.

3603. (*President.*) Suppose the purveyor was dissatisfied with the quality of the meat given to him by the commissariat, he would go to the commissariat in order to make, through their machinery, a contract for a better quality of meat at a higher price?—There is a contract made for the hospitals specially, generally speaking, but not in a place like Kertch, nor in Balaklava. You give the hospital the best you can. If there were any milch cows they would get them, or anything that arrived even without the application of the purveyor would be bought for the sick, if the medical officer was in communication with the commissary-general, which he always is.

3604. (*Sir H. K. Storks.*) In all contracts of that sort there are powers of rejection?—Certainly.

3605. It is always pointed out in the contract what the remedy is, and that the medical officer or the officer commanding the troops may purchase the meat?—Immediately.

3606. The purveyor would have the power, in that contract, to purchase at the cost and expense of the contractor?—Yes.

3607. (*President.*) Do you see any objection to sending out, for the supply of the troops, corned meat in lieu of salt meat?—It might be sent out to a certain extent, not to a very large extent. I should be afraid of corned meat if exposed unsheltered, which it might be, and its not keeping.

3608. How is it packed?—The boiled preserved meat was packed in 6 lb. tins; it would be dangerous to depend entirely upon corned or preserved meat. You may have it as an additional supply; some preserved meat was sent to the West Indies, and they could not use it; and some to Hong Kong, and when it got there it was found unfit for use.

3609. Why? had it been badly prepared, or was it the effect of the weather?—I do not know whether it was badly prepared; probably it was. Some has lately been sent out to China with much more care and attention observed in its preparation.

3610. Is it necessary, for the use of the army, to salt meat as strongly as it is salted for the use of the navy, where it must keep four or five years at a station?—Yes.

3611. Why?—For the purpose of preserving it. It is more exposed with an army than on board ship.

3612. It may be more exposed to the chances of ill-usage; but it is not exposed, of necessity, to being kept so long a time?—They might possibly put less salt to it, to preserve it only for a certain period; but it would be running great risk.

3613. If you sent meat out for the army in the Crimea, for example, and it is ordered in England, corned or slightly salted, and it is sent out on a fortnight's voyage, and it is consumed within a month, why should that be corned to such an extent that you should be able to keep it for four or five years?—I should not use salt meat where I could get fresh; I might not be able to carry it if the army was on the march, and therefore it would remain in depôt.

3614. Would it not be better to run the risk of some of the meat being spoiled, rather than that the men should be made ill by the constant use of strongly salted meat?—Much of the saltness can be removed by steeping it in water.

3615. The navy can steep their meat in water with great ease, having coppers; but how can an army marching do it, where each man's portion is issued to him? how can he steep the meat?—He does not usually get salt meat on a march; they generally have cattle with them; to carry salt meat with them would require too much transport.

3616. As a matter of fact, in the Crimean campaign and in the two Burmese campaigns, the troops preferred living almost exclusively on salt meat?—And they did in Balaklava, because you could get no cattle; you could not keep them there, except what you imported. The salt meat sent out was very good indeed, and in Kertch the men had the facility, being near the sea, of soaking it; and boiled in salt water, it is much better than when boiled in fresh.

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3617. Still you have not always the means of doing that ?—No ; nor are you always in a position like that before Sevastopol.

3618. Has not the sailor a very much more constant supply of anti-scorbutic food to balance the amount of salt meat given to him ?—Yes, he has ; he has everything to his hand.

3619. And peas ?—Yes.

3620. And puddings made of flour and suet and raisins, and a constant issue of lime juice and preserved vegetables ?—Yes ; and such articles are not obtainable on a march.

3621. You say the salt meat is exposed to so much risk. Is it exposed to risks when it remains packed in casks ?—Yes ; if it cannot be placed under cover, it is much exposed.

3622. Do the casks yawn ?—Yes ; they are sometimes obliged to be piled so high, that those which are underneath get injured, and lose the pickle ; you cannot be always moving them.

3623. (*Sir James Clark.*) You have just stated that the salt meat was better when boiled in sea water than in fresh ?—Yes ; the sailors always boil it in salt water. The meat improves by being boiled in salt water ; it softens it a good deal.

3624. (*President.*) You say you have no confidence in the preserved meat ?—I cannot say that I have no confidence in it ; if properly prepared in a government establishment, and properly packed, I think you might then place greater dependance upon it, but I would not depend upon it entirely.

3625. But in order to secure the proper excellence of the supply you think it ought to be made under the eye of government, and not to trust to the supply of tradespeople ?—Certainly.

3626. Would you do that as the biscuit is done down at Gosport ?—Yes, and the coffee I would have ground, but not by contract. At Constantinople there was dirt of every description found in ground coffee supplied by contract.

3627. Would you ever buy coffee ready ground ?—You are sometimes obliged to do so, but there is much difference of opinion about ground coffee. When I went to the Turkish contingent after what had occurred in the Crimea, I applied to the general to know whether he would have it ground or not for marching ; and he said decidedly not, let the men roast and grind it, it preserves the aroma, and the coffee is much better.

3628. The Turks are accustomed to grind their coffee ; but with our men it is not a question between buying ground coffee or in the berry, but whether you can issue it ground or not ?—We tried to grind the coffee in Balaklava. Captain Heath of the navy undertook to grind some, and some roasting machines were made on board a man-of-war, and a party was put to grind the coffee ; some was burnt and some not sufficiently roasted ; if you want it ground you should grind and pack it in government establishments in England, and then it would be as good as it would probably be in the roasted bean. I have seen the French soldier roast coffee, and beating it in a piece of cloth with a stone taken off the road.

3629. (*Mr. J. R. Martin.*) Would it not be better to send out the coffee roasted ; does it not preserve it better by being roasted in England, and being sent out ?—I think not roasted only. The men would have a difficulty in grinding it.

3630. (*President.*) If you buy it ground, you have no security against adulteration ?—None whatever.

3631. You are aware that you are not quite safe even in buying the berry ?—I believe you are not.

3632. (*Sir James Clark.*) But a person of any skill could easily tell which were coffee berries ?—Yes.

3633. (*President.*) Do you recollect what was supplied from the stores at Malta and Gibraltar ?—Salt meat and biscuit.

3634. And salt meat of some standing, I suppose ?—These articles are not now kept in depôt to any extent, so that they shall remain over a long period.

3635. You do not think that the rations of salt meat which are kept in store in the different colonies are so large as to be any injury to the troops ?—Certainly not, it is provided to such an extent only that it may be consumed by occasional issues before it is injured by keeping.

3636. Do you know how often it is used ?—Sometimes twice or three times a week in the West Indies. I have known it supplied three times a week many years ago.

3637. Three times in that climate is unnecessary, is it not ?—Yes, it is now, for you have greater facilities in procuring fresh meat.

3638. The issue of salt meat to the troops three times a week is deleterious to the troops, and, if possible, should be avoided ?—Yes.

3639. Generally speaking now what is the amount of issue in the colonies ?—Not more than once a week. In some it is not used.

3640. Do they issue split peas as the sailors have ?—We used to do so, but in Balaklava the soldiers would not at first use the English split peas, they had thrown away their camp kettles, and found it difficult to boil them.

3641. Peas are not applicable as a part of the soldier's ration, as they require so long a time for cooking, is that your opinion ?—They might be used in garrison.

3642. But not in the field ?—No.

3643. If the stock of salt meat at the out stations is too large from a reduction of the troops, that in order to consume it before it decays a too frequent issue is made of it, could you not sell it ?—I should think so ; that depends upon local circumstances.

3644. As a matter of account would it be objectionable to make the commissariat the salesmen ?—No, they are salesmen ; they sell their own stores when it is necessary—there is no objection on that score.

3645. Is that ever done in the particular case of salt meat ?—Yes. It was sold in the Crimea to vessels in want by officers of the department.

3646. Do you know the meat biscuit, the pemmican ?—I have seen it.

3647. Is there any better security for that than there is for the preserved meat ?—I should be afraid not.

3648. Upon what ground ?—I do not think it would keep if it became exposed to the air.

3649. How is it packed ? in tin cases ?—I believe so, the air being excluded.

3650. Are you aware that the third of a pound is equal in nourishment to a pound of fresh meat ?—I believe so.

3651. With regard to vegetables, have you not a great difficulty in issuing raw vegetables to the troops ?—There is great difficulty sometimes in preserving them. In their shipment to the Crimea they had been sometimes exposed for 24 hours on the decks of boats ; they had been put on board wet, and had become heated, and when we got them great quantities were obliged to be thrown away. The only vegetables that you can with any safety ship to an army are potatoes and onions.

3652. (*Sir James Clark.*) Are not potatoes very easily bruised ?—Yes.

3653. (*President.*) But there would not be the fermentation that there is with cabbages ?—No ; instructions were given to send carrots without the tops ; but you cannot in those countries get them to do what you want.

3654. (*Sir James Clark.*) Did you observe the quality of the preserved potatoes and other vegetables that were sent from France ?—Yes ; they were very good, and the concentrated vegetables were very good, but there is an opinion abroad now that they are not antiscorbutic.

3655. Would there not be more economy in sending out those preserved vegetables than common vegetables ?—To a certain extent there would.

3656. (*President.*) There will always be a difficulty as to vegetables, as it is not always easy to detect their quality ?—You can easily tell whether they are fresh ; that is their recommendation, I suppose. Of course if they had been on board ship a long time, you could not always secure their being fresh.

3657. Do you know enough of the compressed vegetable to be able to say that they afford a safe substitute ?—I think they do, they are very good indeed.

3658. Do they not decay, as the preserved meat does, in hot climates ?—No; they appeared to be well dried and prepared; there were one or two instances where they were condemned at Balaklava ; but M. Soyer found them of good quality. It was some whim of the parties ; they thought from their appearance they were spoiled, and condemned them.

3659. You think that the difference between the security as to the preserved meat and the preserved vegetables depends entirely upon the original care with which the article was made and packed ?—Yes ; and the subsequent care that you can take of them.

3660. If the meat had been equally well prepared originally, and with equal care packed, it would be as secure, would it not ?—The vegetables would, I think, keep better than the meat.

3661. (*Sir James Clark.*) On account of their dryness ?—Yes.

3662. (*President.*) They are very cheap, are they not ?—They are not very dear.

3663. I find in the appendix to the Crimean report it is stated that 1,000 rations cost 2*l.* 12*s.* 10*d.*, that is, six-tenths of a penny per ration, that is as cheap as raw vegetables, is it not?—Very nearly, The ration of preserved vegetables cost $\frac{15}{16}$ of a penny ; the fresh $1\frac{13}{100}d.$ per lb. There is great loss on the fresh vegetables ; and if you carry raw vegetables any distance, and they are exposed, they become unfit for use. The French were very glad to take on one occasion our condemned vegetables.

3664. Looking at the perishable nature of vegetables, and the liability to loss from fermentation upon the whole, you would say that compressed vegetables were as cheap as the raw vegetables ?—I dare say they are, always recollecting the situation we were then in, and the distance we had to bring raw vegetables.

3665. Are they equally antiscorbutic ?—That I cannot speak to.

3666. Have you heard they are not ?—Yes ; I have heard it said that are not. It has been suggested that the rice which they had mixed with them should be omitted, and aromatic herbs introduced instead, for you have always rice with you, and there is no occasion to increase the price of the preserved vegetable by adding it, as was originally the case.

3667. (*Sir James Clark.*) But not latterly ?—I believe it was.

3668. (*President.*) Have you seen any instance of scurvy amongst the troops in consequence of using the compressed vegetables ?—The scurvy had broken out before we had commenced the use of them.

3669. Did it diminish when the vegetables were freely issued ?—I believe it did ; but the medical officers can give a better idea of that than I can.

3670. The patentees maintain that all the antiscorbutic property remains ?—I believe so. M. Soyer told me, when I met him a few days ago, that he had been in communication with the patentees, but whether the fact is so or not remains to be proved.

3671. As far as your experience goes, nothing has occurred under your observation which induces you to doubt their efficacy ?—No.

3672. (*Sir James Clark.*) Your experience has not been sufficient to enable you to judge of the comparative merits of the two ?—No.

3673. (*President.*) As far as your experience goes you are in favour of them?—Yes; but I would not have them altogether. I would get fresh vegetables when procurable.

3674. The present practice with regard to the ration of the soldier is, that the commissariat supplies bread and meat at a fixed stoppage?—Yes.

3675. Then he is required by his commanding officer to spend an additional sum in messing ?—Yes.

3676. What does he buy with it ?—This, I believe, is liable to much variation in different corps, and even in the different companies of the same corps for additional bread, coffee, or tea, pepper, salt, vegetables, and sometimes milk ; and the stoppage varies from $2\frac{1}{4}d.$ to $2\frac{1}{2}d.$ per man daily.

3677. I understand you to say that the stoppage varies in different regiments ?—Yes.

3678. The nature of the articles purchased varies between companies for the same stoppage ?—Yes ; a certain stoppage is fixed for the men, and they spend that sum in any way the commanding officer may think proper.

3679. (*Sir H. K. Storks.*) No. 1 will get its potatoes cheaper than No. 2 ?—Yes, it may.

3680. The stoppage is the same ?—That depends upon the commanding officer of the regiment; it will vary in different places ; for instance, it may vary in London and at Portsmouth.

3681. Not the stoppage, but the price of the article ?—I suppose that the stoppage is regulated by the prices of the articles to be purchased.

3682. (*President.*) As I understand there is a maximum stoppage which it is the general interest of commanding officers to see spent in messing ?—Decidedly ; he does not allow a man to have too much money to spend upon things that he does not require.

3683. At the commencement of the war this system still obtained in Bulgaria ?—Yes.

3684. The stoppage was limited for the ration to $3\frac{1}{2}d.$, and there was an additional stoppage of $2\frac{1}{2}d.$, the men being intended to supply themselves ?—Yes, until a board met and their breakfast was established, and coffee and sugar supplied by the commissariat.

3685. It was established because a certain supply in the market altogether failed ?—Yes.

3686. You were obliged to have recourse then to an issue by the commissariat of the additional articles ?—Yes.

3687. What objection do you see to maki it the permanent system of the army that the com ariat should supply all that is necessary to keep a man in health, and give him three meals ?—The bread I do not think is enough, they ought to have instead of a pound, a pound and a quarter. The meat is three quarters of a pound, and that is sufficient at home, but abroad it is not. It is said that in Canada you get as good meat as in England ; so you do, but not all the year round—not during the six months in the year when it is dried up with frost, you do not.

3688. Do they not give a pound of meat abroad ?—Yes ; a pound of bread is too little, and a pound and a half is too much. When I was at the camp at Chobham, the troops could not use it—they wasted it,

3689. Would it be possible to issue from the commissariat for one gross stoppage of 6*d.*, and abroad 7*d.*, at once vegetables and everything that were necessary for a man's third meal ?—I think it would ; but the difficulty arises in fixing that stoppage. The late war in the east, and field service of the troops in Bulgaria and the Crimea, have, I believe, beyond doubt, established the necessity of such increased ration being provided for the soldier, equal to afford him

Breakfast,
Dinner and
Evening meal.

and the following ration was fixed :—

$1\frac{1}{2}$lb. bread, or 1lb. biscuit ;
1lb. fresh or salt meat ;
$\frac{1}{32}$ of a gallon of rum ;
$\frac{1}{2}$ lb. potatoes or green vegetables, or
$\frac{1}{4}$ lb. of onions, leeks, or carrots ;

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Or $\frac{1}{4}$ lb. preserved or 1 oz. compressed vegetables;
1 oz. rice;
$\frac{1}{2}$ oz. salt;
$\frac{1}{2}$ drachm pepper;
1 oz. lime juice;
1 oz. ground coffee or cocoa, or $\frac{1}{4}$ oz. tea;
2 oz. sugar.

The biscuit was increased to 1$\frac{1}{4}$lb. in the trenches; the fresh meat to 1$\frac{1}{4}$lb. for a short time; and an additional 1-64th of a gallon of rum was sanctioned in the trenches. Originally the ration of rum was 1-64th of a gallon.

The cocoa never appeared to be very palatable to the men; and the lime-juice was frequently undrawn.

The stoppages are at present as follows:—

In hospital - -	10*d.* at home.
„ - -	9*d.* abroad.
„ - - -	8*d.* for boys.
In war 3$\frac{1}{2}$*d.*	
Ration stoppage 4$\frac{1}{2}$*d.*	at home on account of beer money.
„ „ 3$\frac{1}{2}$*d.*	abroad.

Ration on board ship 5*d.*, and 1*d.* additional for spirits, or tea and sugar.

The ration in Crimea - -	3$\frac{1}{2}$*d.*
Coffee, &c. - - - -	1*d.*
	4$\frac{1}{2}$*d.*

So that the man in hospital benefited 1*d.*; but it appears to me that the stoppage might be made uniform, and a deduction of 4$\frac{1}{2}$*d.* made at home, on board ship, and abroad, by allowing the additional penny to be deducted for the stoppage abroad, to be added, as at home, to the soldier's pay.

The present stoppage at 1$\frac{1}{2}$*d.* (or 2$\frac{1}{2}$*d.* for the extra articles), from officers, excepting in the case of regimental officers, is most difficult of collection in the field.

In establishing an uniform rate of stoppage there will arise difficulties in regard to the issue of the ration of spirits and payment of the allowance for beer money, which require much consideration; as also when in hospital, the soldier is, I believe, subject to no deduction regimentally or otherwise.

3690. Could you raise the whole stoppage to 7*d.* at home and 6*d.* abroad, and then supply the soldier through the commissariat with that which he now gets for the ration messing for 2$\frac{1}{2}$*d.*?—I think it could be done; I sent yesterday for different articles; a pound of potatoes, a quarter of an ounce of tea, cocoa, and coffee, to give me an idea of the quantity and price. I have taken the London prices, and it appears to me that the extra articles would cost from 1$\frac{1}{4}$*d.* to 1*d.* and $\frac{65}{100}$ths., and if the stoppage was made 2$\frac{1}{2}$*d.*, I think it would fully cover their cost; it would one place with another; in some places it might be cheaper. In China you get tea much cheaper, and in the West Indies, coffee.

3691. With those prices you think it would be quite feasible, with the addition of 2$\frac{1}{2}$*d.*, to supply the soldier with all those additional articles which he now gets with his messing money?—I think so, as far as I can now judge.

3692. If so would there not be this advantage, that you would then have a uniform practice both in peace and in war?—Yes.

3693. The present practice being inapplicable to war?—Yes, quite so.

3694. Would not there be a great diminution in the accounts, as there would be no variation of stoppages?—No, for the paymaster would deduct from every day's pay the 6*d.*, or whatever may be fixed, whether in hospital, on board ship, or on shore.

3695. And the ration would be sufficient to keep him in health, without any addition out of his own resources?—I think so.

3696. Would there be any difficulty in issuing such a multiplicity of articles?—Not abroad.

3697. (*Sir H. K. Storks.*) It would require an enlarged commissariat staff, would it not?—No.

3698. (*President.*) At any rate, there would be a necessity for an increase of store room?—Nothing very great.

3799. How are the vegetables now kept which are purchased for the men?—They buy them in the market, and they use them day by day.

3700. Would not the supply at once be made by the commissariat in the same way?—Yes, certainly.

3701. They would come fresh to market and they would be used?—Yes, they would contract for them in England.

3702. (*Sir H. K. Storks.*) In case they detached, suppose a company or two, how would they be supplied?—You can always make arrangements to supply them.

3703. Arrangements can always be made to supply them?—I think so.

3704. (*President.*) In what way?—By making an arrangement with some person in the neighbourhood.

3705. A contractor would always, as part of his contract, undertake the business of issuing those things?—Yes, and to give to the companies certain quantities over which they would have a check.

3706. (*Sir H. K. Storks.*) You apprehend no commissariat difficulties of detail in supplying the soldier with his full ration under all circumstances?—I think not.

3707. (*President.*) In peace we have always done it?—Yes.

3708. Did you supply the men with vegetables?—No; but we could have done it without the least difficulty.

3709. Without any increase of staff?—Perhaps you might have wanted an assistant storekeeper to superintend, and to see that the issues were made regularly.

3710. On the other hand, with regard to accounts in consequence of the absence of the stoppage, would there not be a greater saving in clerks who keep the accounts of the stoppages than of additional expense incurred for the issuer?—The stoppage account is kept by the paymaster, and by the commissariat; at one time the money was paid over to us; latterly a system was adopted which obtained 40 years ago, by drawing only the net pay of the soldier, which is the best and proper way. There may be labour saved as to the hospitals and purveyors; it is a tedious process for them to recover, or to say what the stoppages are to be. If a man has been so many days in a hospital, the paymaster will account for the stoppage, and there will be no occasion to give any returns excepting for casualties.

3711. Was there not great confusion as to the stoppages in the Crimea?—Yes.

3712. Take the case of the army which first went to the Crimea. They left this country every man upon a stoppage of 4$\frac{1}{2}$*d.*; there was a stoppage of 6*d.* on board ship if he took tea or spirits, and a stoppage of 5*d.* if he took neither tea nor spirits; and when he landed there was a stoppage of 3$\frac{1}{2}$*d.*, then an increase of stoppage to supply the breakfast to 4$\frac{1}{2}$*d.*, and then he went into hospital, where it went back to 3$\frac{1}{2}$*d.*?—Yes, there is much vexatious trouble in those different rates.

3713. The soldier was at least dissatisfied, and a sort of equitable adjustment was made with him?—Yes; through the paymaster.

3714. Are you aware of the ration which is given in the Crimean report?—No; but it is the same, I believe, that I have given in, excepting that I have altered it to make it the personal ration of each man. I see they have two ounces of rice; it was for some time that quantity, but one ounce was the ration.

3715. Looking at that ration, do you agree with the statement made by the Commissioners, that for 2$\frac{1}{2}$*d.* in addition to the existing stoppage they could have made that addition to the ration?—For 2$\frac{1}{2}$*d.* and 4$\frac{1}{2}$*d.*

I think they could, but I will prepare an estimate of the cost of the extra articles. (*See App.* XXIX.)

3716. It is a complete ration they maintain for $2\frac{1}{2}d.$ in addition to the $3\frac{1}{2}d.$, supposing that the bread and meat can be given for $3\frac{1}{2}d.$?—I think they can.

3717. That would give three good meals to the soldier ?—Yes; I see they have 24 ounces of bread, that is $1\frac{1}{2}$lbs., but it is too much, $1\frac{1}{4}$lbs. is quite enough.

3718. (*Mr. J. R. Martin.*) And 16 ounces of meat ?—Yes, abroad; at home I think three-quarters of a pound quite sufficient.

3719. (*Sir H. K. Storks.*) But reckoning the bone it is not three-quarters of a pound of cooked meat ?—I do not think that the men eat more than that at home.

3720. (*Dr. A. Smith.*) Do you think that any person who has an opportunity of getting what he wishes would be satisfied with three-quarters of a pound of meat ?—I think he would.

3721. A growing soldier ?—Yes, good meat, such as you get here, but I do not think it would suffice abroad.

3722. Perhaps three ounces are lost in the cooking? —Yes; sometimes.

3723. Would the remainder be sufficient ?—Soldiers are not very great eaters; one man with another, I think it would, and they are generally in messes.

3724. (*Mr. J. R. Martin.*) Or where a soldier is liable to severe work or marching ?—No.

3725. (*President.*) Do you think that an additional quarter of a pound abroad does not cover the inferior quality of the meat ?—I think it is a fair equivalent.

3726. (*Dr. A. Smith.*) Do you think that the soldier would not be glad to have a little meat for his breakfast, besides dry bread and tea ?—He might perhaps, but I do not know in a regiment what arrangements they make about the meals; I have seen the meat abroad sold by the cooks.

3727. (*Sir H. K. Storks.*) Does not that arise from the bad manner in which it is cooked ?—No; I think that the cooks of regiments selling the fresh meat shows that the men did not get it.

3728. They were defrauded of it ?—Yes; I think you will find at home three-quarters of a pound of meat is sufficient. I do not think they will eat more than three-quarters of a pound of meat.

3729. (*Mr. J. R. Martin.*) In that case a man has no supper?—But he is to get a supper. It is proposed that he should get a third meal.

3730. With three-quarters of a pound of meat he cannot have a supper with animal food in it ?—No, I think three-quarters of a pound would be required for his dinner. I do not know that it is necessary for a man to have meat more than once a day.

3731. But nothing remains over for the following morning?—No.

3732. Is it not desirable that some meat should remain over for the supper, or for the breakfast, if the soldier prefers it ?—I do not think that animal food is requisite more than once a day.

3733. (*President.*) Is not the soldier exposed sometimes to very severe labour, such as digging ?—He is occasionally.

3734. And to very severe marching ?—Yes.

3735. And walking sentry for 8 hours out of the 24 ?—Yes.

3736. (*Mr. J. R. Martin.*) Are you aware that in the European regiments in the East Indies, in a climate where so much animal food is not required as in a temperate climate, the ration of animal food is still sufficiently liberal to allow the soldier to have something remaining over for his supper, and that it is found to be conducive to their health to have supper ? —I was not aware of that. I thought that in the Indian army it was one pound of fresh or salt meat.

3737. I speak particularly of European regiments in the East India Company's army ?—I can give you information from a paper I hold that, in Hong Kong, they then only had one pound of fresh or salt meat.

3738. (*President.*) Are you aware that in the navy the meat ration is 16 ounces of fresh meat, or 12 ounces of salt ?—Yes; less of salt than of fresh, but they make it up with something else. When they give them salt meat, they make it up with peas.

3739. Pudding, peas, cocoa, cheese, and all those things besides ?—Yes.

3740. I will read you a Yorkshire farm labourer's diet,—bread, rough weight in ounces, 40 ounces; beef, 18 ounces; bacon, 7 ounces; vegetables, 4 ounces; beer, 60 ?—That must be during harvest time.

3741. You stated before that you would not supplement the salt meat ration by peas for the army in the front, on account of the difficulty of cooking it ? —I would give peas, or haricot beans, or yams, or potatoes, or bananas as vegetables.

3742. Have you drawn up any rations as substitutes for the home ration for different climates ?— I have put down the different climates where articles of local produce can be substituted.

3743. Will you just read them ?—The ration established in the Crimea might probably admit of the following alteration;—At home, where fresh meat can generally be obtained of a much superior quality, it should remain, as at present, three-quarters of a pound, and at home and abroad the ration of bread should be fixed at $1\frac{1}{4}$lb.; and the other articles might be the same, excepting lime-juice, which should only be issued when deemed advisable by the senior medical officer. Such local modifications or substitutions of one article for another might be sanctioned should it be deemed advisable.—In the West Indies, yams, the sweet potato, and the banana, instead of potatoes.

3744. (*Sir H. K. Storks.*) Spirits never form a ration by right ?—Not by right, that has been the case ever since I have been in the service.

3745. (*President.*) Except on board ship ?—Yes. I believe that is an exception; they may have rum, or tea, or sugar by paying the extra 1*d.*

3746. With regard to those alternative rations which you propose for different climates, would the change augment the cost, or would they be all within the sum you have mentioned ?—I do not think there would be any great difference; I think the cost of the ration would be about the same. If you substituted the banana for the potato, or the sweet potato for potatoes, it would be less.

3747. Would you put cheese into the ration ?—No, the soldiers would not take cheese in the Crimea. It may have been that it was foreign cheese, it was condemned and thrown into the sea at Balaklava.

3748. The common English cheese would be the best for their consumption, would it not ?—Yes.

3749. And that I suppose they would like, as it is the habitual food of the class from which they came ? —But what would you give it instead of? I think that already the articles proposed are sufficient.

3750. Is not cheese one of the articles enumerated in the Crimean report ?—No; cheese is not in it.

3751. (*Dr. A. Smith.*) Did they not refuse the cheese in consequence of its being made an extra charge, provided they took it ?—No; it was given gratuitously, but they would seldom take it.

3752. (*Mr. J. R. Martin.*) Was it not foreign cheese, and indifferent in quality ?—It was; some of it was Parmasan cheese.

3753. (*President.*) The poorest kind of cheese keeps the longest, does it not ?—Yes; but it becomes hard and unpalatable if kept long.

3754. And it contains more of the nitrogenous quality ?—I do not know.

3755. (*Dr. A. Smith.*) Are you satisfied that it was issued without any additional cost ?—I am.

3756. Did the soldiers object to accept the preserved potatoes ?—They did at one time.

3757. Was not that in consequence of their being made to pay additional money ?—No; even when they got them as free rations the men did not at first like the preserved potatoes.

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3758. (*President.*) In the same way they objected to the cocoa?—Yes, they did not like it.

3759. (*Sir H. K. Storks.*) They would like tea better than coffee?—No; I think coffee they like the best, and I think coffee is the best for the soldier.

3760. (*President.*) The navy cocoa was tried in Bulgaria, was it not?—Yes, I think we had some, but the men did not like it. They used to roast the coffee in the lid of the camp kettle, which was then a very different one to what they have now. When they tried it in the late war it would not stand the fire.

3761. (*Sir J. Clark.*) Do you make a difference in the diet of the soldier according to the climate he is serving in, between the West Indies, for instance, and Canada?—Scarcely any.

3762. (*President.*) But by your improved ration you would?—There would be local modifications or substitutions of one article for another, which might be sanctioned should it be deemed advisable.

3763. (*Sir J. Clark.*) Would you not increase the food in a northern climate?—No, I think not; I think that the animal food is quite enough.

3764. (*President.*) Do you not increase it in Canada?—No, we only give them a pound; I do not think a man can eat more than a pound.

3765. (*Sir J. Clark.*) Did you make any difference in the diet of the Turkish contingent?—Very great. (*Vide Appendix* XXV.)

3766. (*Mr. J. R. Martin.*) What was the difference?—The ration of mutton was 9 oz., of beef 13½ oz.

3767. (*Sir J. Clark.*) Did you mark what effect that had upon the health of the men?—I never saw a finer division of foreign troops than the division of the Turkish contingent commanded by General Cunnynghame, who took great pride in them.

3768. They thrived upon the diet that you gave them?—Yes; they got the full diet sanctioned.

3769. (*Mr. J. R. Martin.*) Should you not consider that the ration, such as you describe it, was still above the average of their ordinary diet in their own country?—I should, because they got their full ration with us, which they did not get under their own pashas.

3770. In fact they were better fed by you than they had been by any of their former rulers?—Yes; and the men said so.

3771. (*President.*) Did they improve in appearance?—Yes, very much.

3772. (*Mr. J. R. Martin.*) How came the office of purveyor to be established in the British army? Did the office precede the formation of the commissariat department?—No; it followed it in the Peninsula, to the best of my recollection.

3773. Could not the commissariat department supply to the hospitals all the articles which are now supplied by both the purveyor and the commissary?—Yes.

3774. When troops are on the march or with the enemy in front, do the hospitals in either case continue to receive the best of the meat as you have stated they did in Kertch?—I cannot say that they received the best of the meat; I believe it to have been as good as could be obtained.

3775. It has been stated that in India, where the commissariat department supplies everything both for the hospitals and the troops in front, when the troops are in active movement those in front are well served, and the hospitals must take what they can get. Have you seen any such differences in the supply of the hospitals?—Certainly not.

3776. (*President.*) Take this case, suppose a large hospital at the base of operations and a large quantity of cattle was collected for the use of the army, would not the commissariat officer be disposed to send the best beasts forward to the army as being those that would stand the journey the best?—He would probably send forward the most lively, not always the fattest, as they could not perform the journey so well. There are men entrusted with such duty, and they make arrangements for its proper performance.

3777. In the selection, as a matter of necessity, the best animal would go first?—I do not think so; if the medical officer expressed a wish that good meat should be retained for the hospitals, I do not think there would be any difficulty made to comply with it.

3778. (*Sir H. K. Storks.*) You send forward the best marcher, do you not?—Yes.

3779. And kill the weakly animals?—Yes.

3780. (*Mr. J. R. Martin.*) Would you recommend the abolition of the office of purveyor, and the substitution of a special commissariat officer for the service of hospitals, general and regimental?—It appears to me that it might tend to economy if the purveyor's department was made a branch of the commissariat, and rendered their accounts to the senior commissariat officer. As both are now under the authority of the war department, instructions could be prepared to carry out such a measure which would greatly simplify and facilitate the present mode of transacting business. All purchases for the army abroad are now made by the commissariat, and were competitors to appear in the same market, prices could not fail to be enhanced to the detriment of the public.

3781. I apprehend that you do not recommend the absorption of the purveyor's function by the commissariat?—No; I would leave the purveyor still to perform his functions with the general hospitals. He now receives from the commissariat any articles which he may require by requisition. The principal articles are provided by a general contract for the army—for the whole number of the army; the purveyor may have milch cows if he wants them for the hospital; he attends to a great many duties that probably in a general hospital should not devolve upon the commissariat officer.

3782. Why not?—I think it is a peculiar duty that the purveyor has to perform; and therefore I would not take away an officer who was accustomed to a general hospital, but I would leave him in the charge. He knows the rules and regulations of this special service; but as for his keeping separate accounts, and receiving separate means, I think it unnecessary.

3783. (*Dr. A. Smith.*) Under whose control would he be in a general hospital?—He may be under the control of the medical officer, or that of the commandant.

3784. Just the same as the purveyor is at present?—Yes; but his accountability should be under the commissariat.

3785. (*Mr. J. R. Martin.*) By that arrangement he would be under the daily orders of one officer, and he would be held responsible to another officer of another department?—It would be only the same as his responsibility to the War Department as regards his accounts.

3786. (*President.*) The only change that you contemplate, is a change with regard to the accounts?—Yes; there are situations where you have purveyors where you do not want them; but where there are general hospitals it is necessary to employ a purveyor; but there are purveyors who have scarcely any duties to perform, such as in Jersey.

3787. (*Mr. J. R. Martin.*) In the Crimea there was a great deal of clashing and confusion of the duties between the purveyor and the commissariat department, one making a contract and another paying for it; one having to see to the washing, and another to attend to other articles of supply?—I think not.

3788. (*Sir H. K. Storks.*) Even now the purveyor must make an application to the commissariat when he wants a contract entered into for anything?—Yes; but there are not many articles that you cannot supply him with at once—such as bread, flour, biscuit, rice, sugar, and coffee.

3789. Suppose there was a want of oranges, would he apply to the commissariat?—No, except when he cannot get them on the spot himself.

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3790. (*President.*) The practice is that the purveyor goes to the commissariat only for things which the commissariat habitually supplies, such as bread and meat?—He goes to him for everything when he cannot meet with it in the market himself; for example, at Kertch, he could not get oranges, and he came to me, and there happened to be a vessel with some on board, and I purchased them for him.

3791. But medical comforts, such as arrowroot and sago, they habitually procure for themselves without reference to the commissariat?—No; there is a commissariat contract made for those articles.

3792. (*Mr. J. R. Martin.*) He is the receiver of what the commissariat dispenses to him?—Yes; and he is with the medical officer the judge whether they are of sufficient good quality; if not, he has the power of rejecting them.

3793. The only change that you recommend is, that he should account to the commissary-general, instead of, as he does now, to the chief authorities at home?—Yes; and that there should be a purveyor attached to a general hospital whom it should not be in the power of the commissary-general to withdraw, except with the concurrence of the medical officer, supposing that he did not render his accounts satisfactorily.

3794. Do not you admit that putting him under the commissary-general is giving him two masters, and that he would not serve the medical officer so implicitly as he would otherwise do?—No, I think not. It is now merely a nominal affair; a requisition is made, and the articles are bought and paid for by the commissariat, and settled for afterwards; the purveyor signs a receipt, and then he has to take all those receipts back and get the money from you and pay it back again; it is only a paper transaction.

3795. That might be dispensed with without constituting the purveyor part of the commissariat?—It might.

3796. If you do that will he not look to the officer outside of the hospital as the source of his promotion and advancements, and as the person who could dismiss or remove him if he misbehaved himself?—He could be no more dismissed by the commissary-general than he could be by the commandant of the garrison, unless he committed a fault punishable by the articles of war.

3797. (*Sir H. K. Storks.*) But the commanding officer would be the superior officer of his department, and he would have two masters instead of one?—I do not see any particular necessity for their being attached to the commissariat, but let them render their accounts to the commissariat.

3798. (*President.*) You think that the rendering the accounts to the commissariat would cover all the objections to the existing system?—It would tend to simplify the service. Where there are no general hospitals on a large scale, it appears to me there is no occasion for a purveyor.

3799. (*Mr. J. R. Martin.*) Have you not stated that the regimental hospitals are supplied by the commissariat, and the general hospitals by the purveyors?—The regimental hospitals are supplied in the same way as the others—they get all articles by contracts entered into by the commissariat. There is no purveyor attached to a regimental hospital.

3800. (*President.*) Why is one place unsuitable for a purveyor? If a garrison be a very small one it will require either a commissariat officer or a purveyor?—You are generally obliged in small garrisons to have a commissariat officer, and that commissariat officer performs the duties of the purveyor.

3801. (*Dr. A. Smith.*) Is there a commissariat officer now in the Channel Islands?—No.

3802. (*Mr. J. R. Martin.*) Is the commissariat kept on the same footing during peace as in war in this country?—It is not. On the moment of emergency we are sent off anywhere and everywhere; but that over its officers are dispersed over the colonies or placed on half-pay.

3803. In peace should the commissariat be kept upon a footing sufficient for its easy increase on a declaration of war?—Most decidedly. You lose more in one year, at the outbreak of a war, than would keep up a proper establishment for twenty.

3804. Are you aware that in the Indian army there has never been such a functionary as a purveyor, and that all the hospitals are furnished by the commissariat department?—I was not aware of that.

3805. Can you furnish the commission with the French ration as well as the English?—I beg to hand it in. (*See Appendix No.* XXV.)

3806. (*Dr. A. Smith.*) From your experience in the service are you of opinion that it is a good plan to issue a spirit ration to the soldier regularly?—I think it is; it is always resorted to on active service.

3807. (*Sir H. K. Storks.*) Do you think that the efficiency of the soldier is improved by it?—Yes; I think it is better to provide it for him of good quality than that he should spend his money in the canteen for bad spirits.

3808. (*Mr. J. R. Martin.*) Should it be served as a regular ration to a young recruit?—I do not think the small quantity given to a soldier would do him any harm.

3809. (*Dr. A. Smith.*) Would it not be better to substitute beer for spirits?—You cannot abroad.

3810. But suppose you could substitute ale for the spirit ration, would it not be more desirable?—I am not prepared to say that it would not be in a country like this, where you can get good ale and beer, but abroad you cannot get it.

Dr. John Conolly examined.

Dr. J. Conolly.

3811. (*President.*) You have had great experience in the treatment of lunatics?—Yes.

3812. You are acquainted, are you not, with the hospital at Haslar?—Yes, I am.

3813. That hospital was, I believe, put upon an improved system by a gentleman connected with yourself?—Dr. Anderson was a friend of mine, and had frequently visited Hanwell.

3814. Have you frequently visited Haslar since his appointment there?—Not frequently. I have been there twice since; once before he went, and twice since.

3815. Have you any knowledge of the proportion of cures to admissions at Haslar as compared with other asylums?—No.

3816. So far as you are acquainted with it, you believe it to be, for its purposes, very successful?—Particularly so for the class for whom it was intended, as to their comfort and general health. (*See Appendix No.* XLV.)

3817. Is there anything arising out of the peculiarities of the class of men who are treated there which renders the treatment different from that which would be adopted in the cases of ordinary lunatics?—Yes; it appeared to me that they were much more favourably placed there than they would have been if put into any ordinary asylum, as they have around them those objects in which they take an almost exclusive interest; and they have many amusements connected with their former profession, and yet not entailing the least anxiety upon them, but doing them good, and the good done sometimes was very marked indeed.

3818. They are sent out boating, are they not?—Yes; on one occasion a man who had not spoken for a great many years spoke for the first time within the hearing of many when he caught some fish when boating and was counting them, and from that time he began to recover.

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3819. In that particular case the proximity to the sea and the sight of shipping was you think, a very great advantage ?—It seemed a very great advantage. The first time I visited the hospital, although they were so near the sea, there was a high wall between the sea and them, and many things were done to make them very uncomfortable. Restraint was used to a considerable extent, but afterwards, when Dr. Anderson introduced his change of system, the walls were lowered, and in some places mounds were raised, and the appearance of a great number of the patients was wonderfully satisfactory,—they seemed pleased and cheerful. One patient, Patrick Walsh, who had been in restraint and always handcuffed, and who they thought could not be liberated, was, when I saw him the second time, without handcuffs, and he employed himself in making little balls for children to play with ; and all restraint was entirely abolished from the asylum.

3820. (*Sir James Clark.*) Is it your opinion that that case would be more likely to be cured in that asylum, than if he were sent to a county asylum ?—I am inclined to think that he would.

3821. (*President.*) The profession of a sailor is a very peculiar one ; would you make the same remark as to a soldier ?—I do not think that the peculiar resources are quite so many, but there are certainly some. But before giving any precise opinion about the soldier, I must observe that I do not quite understand whether the intention is to provide for him an asylum in case of an occasional attack of insanity—a first attack—and then, if he gets well, to restore him to the service, or whether he is to be kept there when incurable, as it makes a great difference in the question altogether.

3822. The practice being not to send a man back to the ranks, it having been found inexpedient to do so, would you consider that a separate lunatic asylum is necessary to keep either the incurables or persons who, upon cure, would be sent to their friends in civil life ?—No ; it seems to take away in a great measure the necessity for any special provision for them of that kind, excepting the necessity which arises from the difficulty of putting them in county asylums, which, it appears, is great, as their parishes cannot always be made out. And certainly other asylums, where patients are received for small payments, cannot generally speaking be recommended. There may be one or two exceptions, but generally they are to be entirely condemned.

3823. The practice in the army as to lunatics is this—they come to Chatham to be under observation, and are then discharged from the service ; and if their friends can be traced, they are sent back to their parishes, from which they would go to the county asylums, which are good ?—Yes.

3824. But the only lunatics as to whom there could be any question of the government permanently treating, would be those whose birth or whose parish cannot be traced. I believe they are generally about 80 in number. Would you for that number think it advisable to construct a separate military lunatic asylum, or would you trust to their being sent out to private asylums ?—I think that for so small a number one would scarcely recommend the great expense of a separate establishment. Besides which I think so small a number would not be so advantageously treated as they would be if they were scattered ; because where there were more patients, where you have a great number, you commonly have a more efficient man at the head of the institution. It is not worth while for a man to take the charge of about 70 or 80 people in a public institution. I think that you would hardly find men anxious to take it.

3825. (*Dr. Andrew Smith.*) We must assume that the government would take care that an efficient man would be at the head of the establishment, which contained 80 patients ?—I have no doubt that they would. The great difficulty, that you would have in that case, would be with respect to finding medical men willing to devote themselves to so small an asylum. Assuredly they ought to be prepared for undertaking such a charge by a considerable and intimate acquaintance with what is done in the best conducted county asylums.

3826. (*President.*) Would you say that a man of fair average ability, or taking two men of equal ability, would either of them, with the necessary study, be equally well adapted to manage a lunatic asylum, or does it require some peculiarities in character ?—I think that it requires adaptation of character, a peculiarity in character. He must not be merely a man who looks at a patient in a military point of view. He ought, secondly, to have experience, which might be gained in six months easily enough, as to what is done in an asylum, and the general mode of managing people in the various moods of mind and temper.

3827. Supposing that men have equal opportunities of study and experience, is it not true that there are some who have a special turn for the management of lunatics, and of that quality you cannot ascertain the existence beforehand ?—It is often difficult to do so.

3828. The probability is, that if an army surgeon were selected for general intelligence, and sent to study in some lunatic asylum, it might be that we had not got the very best man for the purpose, though he used every opportunity to study ?—There might be some difficulty, no doubt, in that ; but generally speaking, I think you would require very little more than that a man should have intelligence, good sense, and a kind indulgence for all his fellow-creatures. It is nothing but the exercise of kindness and forbearance towards people who are insane ; and sometimes it rather casts a satire upon what is done out of an asylum, to know that there is more of that kind of charity exercised in regard to lunatics than there is among sane people. I should think that the difficulty is rather in the habits of medical military men than in the want of men of good disposition.

3829. Do you think that their habit is too much that of command ?—Yes ; and too much the habit of suspecting that in every case there is deception.

3830. When you say that so small a number as 80 is not so good, do you mean that in private asylums you would not find so eminent a man at the head of a small one as of a large one ; or do you think that a small asylum has not the same advantages for the classification of patients as a large one ?—I think that a man having charge of anything like a public establishment, with only that number of patients, has not his mind strictly kept up to the point of tension and interest which it ought to be. Though large asylums are in many respects objectionable, they have a very great advantage in that respect. In a large asylum, a man's chief interest is his asylum, and he has no time for anything else. There is also more life and variety.

3831. What are the disadvantages of large asylums ?—When they are carried to too great an extent, such as they project at Hanwell, the health of the patients is really deteriorated by so many being crowded together within a given space ; and also the arrangements of the asylum are such, that there is great fear many of the wards may be neglected. The wards on the third storey are, I think, invariably in some degree neglected.

3832. Why so ?—I think partly from the extreme physical fatigue attending going constantly into them, and partly because patients sometimes are put there and forgotten. They are out of sight, and there is a difficulty in conveying provisions and other things required to them, and in getting the patients comfortably up and down stairs.

3833. When you speak of a large asylum, and a small one, what are the present numbers at Hanwell ?—About 1,100.

3834. You do not think that too large, do you ?—Yes, I do ; I think that hospitals for 500 would be about the best, if they could be limited to that.

3835. It is contemplated, is it not, to increase Hanwell beyond that ?—It is meant to enlarge it for 600

more; and, according to the plan, in the report that I have laid before you, they put another story upon every part of the building that will support it. Already there are now two stories, and a basement in some of those parts of the building, so that there will be four stories.

3836. You think the third story objectionable?—Yes; a man walks through the lower wards and comes back through the upper, but if he has to retrace his steps, and go up again, I know that he will often be glad of any excuse for not going that day, the physical fatigue and exhaustion being so great.

3837. (*Sir James Clark.*) You think that no lunatic asylum should be more than two stories high?—Yes.

3838. (*Mr. Martin.*) By the increase that you speak of ventilation will be more difficult?—Yes; that is a point about which the committees of asylums seem to know but little. They speak of the advantages of large dormitories, but in walking about at night through the wards of Hanwell, when I have come to the staircases leading to the large dormitories I have been struck down almost with sickness.

3839. Though that was the ventilating trunk?—Yes; and the patients had only been in bed for two or three hours perhaps.

3840. (*President.*) You require a larger amount of space in proportion for a lunatic than for a healthy man?—I think that that should be the general rule, particularly in those parts of the asylum where they are employed. If they run against one another they are irritated, and the object is to keep all quiet.

3841. Is not the emission from the lungs and skin of an insane person more deleterious than from a sound body?—Sometimes it is especially so, and it is remarkable that it will disappear and appear according to the patient's mental condition; so that you may foretell in some cases that a paroxysm is coming on, by the peculiar odour from the skin; not only in the poor, but in persons most scrupulously cleanly, ladies and gentlemen of the most delicate character.

3842. (*Sir James Clark.*) So that a lunatic asylum would require more careful ventilation than a hospital?—Yes.

3843. (*President.*) In other respects would the building for a lunatic asylum be different in construction to that for an ordinary hospital?—Yes; I think that there should be a difference throughout. I think that the general simple plan of an asylum does not seem required in a hospital, namely, that of having long corridors with rooms opening out of them; that seems to be the best plan for an asylum, but in a hospital I imagine that would lead to a waste of room.

3844. But a hospital so constructed would be available for the purposes of a lunatic asylum?—Perfectly so.

3845. The corridor you attach very great importance to?—Yes; the patients cannot all be trusted to go in and out, but they can generally be in the galleries.

3846. If the government had a building constructed upon that principle, available for lunatics, you would say as to such a building, that you could not well have anything much better?—No; I think generally it would be very good.

3847. (*Sir James Clark.*) You require special exercising places for lunatics, do you not?—There should be an abundance of ground round the building. There has been one great error at Hanwell; though increasing the numbers continually, they have no more land now than they had ten years since.

3848. (*President.*) Is there any truth in the supposition that, for the treatment of lunatic soldiers, it is an advantage to have them together, as you can carry on the species of discipline to which they have been accustomed?—With regard to soldiers, I presume you have young men from 20 to 40, and they are very liable to derangement. At that period of life attacks of acute insanity are more common than earlier or later. At the same time they are much more curable; and I have thought that if the object was to cure the soldier, and to return him to his duties, it would be well to keep up soldierly habits and parades. Serjeants, non-commissioned officers, make the best of all attendants upon lunatics. They would have been in charge, and by keeping up the order observed in the military service, the man would return as a matter of course and perform his duties with greater facility, I think, than if he were put into a civil hospital and then taken back into the regiment.

3849. That would be rather with a view to his future career as a soldier?—Entirely.

3850. Is it not the fact, that the great majority of cases of lunacy in soldiers arise from drink?—Yes, I believe so.

3851. In those cases is there any advantage, do you think, in having them together?—Those cases generally recover very soon; the greater number do. A young man, if kept sober, begins to recover his mind in a few weeks, and in two or three months he is well, and you cannot keep him in any asylum; if the man could be persuaded to remain sober, I believe he might be a very efficient soldier.

3852. Have you many of those cases at Hanwell?—Yes, a great number, especially among the poorer Irish in London. Many of them have been admitted into Hanwell several times. They go out quite well, and they come back again insane.

3853. They cannot resist the temptation?—No; and yet they get so well that we cannot keep them there.

3854. (*Mr. Martin.*) Those are cases in which an acute attack is complicated with delirium tremens?—Very often.

3855. (*Sir James Clark.*) Setting aside the future of the soldier, is he more likely to recover in a military asylum or in a county asylum mixed with civilians?—I think that a recent and acute case might have as good a chance of recovery or better in a military asylum, having the advantages of military order and precision, supposing also the superintendent of the asylum to be possessed of all the requisites for the proper management of lunatics; at the same time, it would be easy in a military asylum to adopt everything that is done in other asylums, if the superintendent were so disposed. (*See Appendix* XLV. and XLVI.)

3856. (*Sir H. K. Storks.*) You find military attendants the best?—Always. The best attendants that I ever had at Hanwell were old serjeants or discharged soldiers. They both commanded and obeyed well; they took great care and enforced obedience where it was necessary, and they attended strictly to the orders of those above them. I think that the sound of the bugle, or a drum and a little parade got up every morning would help to keep an insane soldier all right.

3857. (*President.*) So that there would be that advantage, that you could with soldiers treated separately in a military asylum superadd the advantages of military discipline to the curative processes which are employed in civil establishments?—Yes.

3858. Is there any truth in this, that it is a disadvantage to keep lunatics exclusively of one class together?—Generally speaking we should not do that in civil life, and we remove a man as much as possible from all his former occupations; but that I do not think would apply to a private soldier. I beg to say that I do not think the officer of the army would be benefited by being taken to a military asylum. There are so many very good asylums—the Warneford asylum at Oxford, the Coton Hill asylum near Stafford, and several houses in which patients are received for moderate rates of payment, and have every possible advantage.

3859. (*Mr. J. R. Martin.*) The difference in the treatment of the two would arise, would it not, from the superior education of the one as compared to the other?—Yes, I think so.

3860. (*President.*) But with lunatics or professional men, whose lunacy arises from over-work of the brain, your object is to break all associations with their past life?—Yes.

Dr. J. Conolly.

10 June 1857.

3861. Do you think that that does not equally apply to the private soldier?—No, his work does not occupy his brain much; it is a mere matter of habit.

3862. You state that upon balancing all the advantages and disadvantages, you would prefer to see the soldier in a military lunatic asylum, but not the officers?—Yes; but I should limit that to recent cases, because if a man had a second attack you could not trust him any more as a soldier in any climate; but I cannot help thinking that there are many cases of recent occurrence where a man may never have another attack.

3863. (*Mr. Martin.*) In the instances where the cases were deemed to be incurable, should you then give the preference to civil institutions for common soldiers?—Then I think it becomes more a matter of financial consideration than any other. I think he would benefit probably more in a county lunatic asylum; he would be occupied in something, in gardening or farming.

3864. (*Sir James Clark.*) In the curable stages you would prefer a military asylum?—Yes, I think it might be desirable.

3865. (*President.*) You would prefer that a soldier who has a chance of being cured should be treated in a military lunatic hospital, but you see no advantage in keeping an incurable military lunatic in a military asylum?—Exactly so.

3866. There being some difficulty in always keeping a government establishment up to the mark, they not having the advantages which private asylums have of constant competition between themselves, do not you think that that ought to be an element to be considered in deciding upon the question?—I suppose there is an unwillingness to let the commissioners of lunacy exercise their usual functions in the military asylums.

3867. Have you seen a printed paper giving the report of Messrs. Gaskell and Milton upon the state of the lunatic asylum at Yarmouth?—Yes. There the establishment was altogether very much inferior to what the wants of the service required. Very much indeed. But it appeared to me that the commissioners there made a very excellent report; and I must say that, making allowance for all men having such duties to perform, they do seem to keep the asylums as much as they can up to the proper point. I only wish that the Middlesex magistrates as to Hanwell had paid a little more attention to their wishes and representations. I believe the views of the commissioners generally to be exceedingly enlightened and liberal, and I cannot help thinking that their visits would be very useful.

3868. Supposing, therefore, that the government authorities made no objection to the visits of the lunacy commissioners, do you think that that would be in itself sufficient to keep them up to the mark of private establishments?—Yes. I really think it would be very important, because there are no people who are so intimately acquainted with the best asylums as the commissioners are: their attention is constantly given to them.

3869. You stated just now that the private establishments are sometimes not trustworthy?—I mean where they profess to take patients for very low sums of money.

3870. They are equally under the visitation of the Lunacy Commissioners, are they not?—They are; but the Commissioners have sometimes over and over again to suggest improvements which are not followed. Some of the borough asylums have been very bad in that respect. The only one almost, among such private establishments, that they speak very well of is that at Bow.

3871. To which the soldiers are now sent?—Yes.

3872. Therefore the inspection of the Lunacy Commissioners is not in itself sufficient to secure efficiency?—No; perhaps there might be in a military asylum some power to enforce what was recommended by them.

3873. When you state that those asylums are not trustworthy where they charge low rates, the rates charged in those places are not lower than the cost at Hanwell?—No; but the difference of the treatment in every respect is almost incredible; and in looking through the reports of the Commissioners you will sometimes find that year after year they have pointed out in different parts of the country objectionable things that have been taking place which have been very slowly amended. Of course, upon the whole, they have done great good, and I trust there are now scarcely any asylums in England so bad as formerly.

3874. (*Mr. J. R. Martin.*) Have those difficulties arisen with the municipal authorities, or with whom?—Yes; I know the borough asylum near Hull. It is a miserable place, and in every respect unfit for lunatics, and the Commissioners have been for half a dozen years endeavouring to get it improved.

3875. There again the municipal authorities have been the parties at fault?—Yes.

3876. (*Sir James Clark.*) Do you not think that we have too few Commissioners, and that they cannot visit as often as they ought?—I believe that is the case, that they are really overdone with work; they often appear to be obliged to put off visits.

3877. (*President.*) Can you state the cost of each patient at Hanwell?—I think about 24*l.* a year; that includes subsistence, dress, furnishing, salaries, medicines, and everything.

3878. (*President.*) Everything, except the original cost of the building?—Yes.

3879. Does it include the annual repairs?—I think not. In the report there are very ample details of everything given as to the cost of each person.

3880. Have you any objection to state whether the selection by the government of Coton Hill for officers and of Bow for privates is a judicious one?—So far as I know the arrangements appear to be good at Bow. I must say that although I have wished to visit it, I have not seen it. But as to Coton Hill, I can speak positively, and as to the little asylum at Cheadle, and the one near Oxford, the Warneford asylum, and the Northampton asylum under Dr. Nesbitt. All these I can speak to most positively as being well conducted. The asylum at Northampton is supported chiefly by contributions and subscriptions. They take patients at very moderate rates of payment, and also paupers.

3881. (*Sir H. K. Storks.*) Is it a large establishment?—Yes, I forget the exact number; there must be 200 or 300.

3882. (*President.*) Then we may also assume, that we should be safe in sending lunatics back to their friends, through whose instrumentality they may go to the county asylums?—Yes; there has been a very great improvement. I believe that every county asylum now is fairly conducted, and some are admirably so.

3883. (*Sir James Clark.*) You judge of Bow, do you not, from the reports of the Commissioners?—Yes, and from some private sources—what people have said; but I have always had a doubt as to the locality, that there could not be space or air enough; there must be great defects, but the patients are kindly treated, well fed, and taken care of.

3884. (*President.*) Is there anything that you would suggest to the Commissioners on this subject? No; I do not know the proportion of the insane to the whole strength of the army. I saw that there were only 117 patients at Haslar, and that out of a navy of 40,000. I do not know how many cases there might be in the army to provide for altogether.

The witness withdrew.

Adjourned to Friday next, at One o'clock.

Friday, 12th June 1857.

PRESENT :

The Right Hon. Sidney Herbert, M.P.	Dr. Andrew Smith.
A. S. Stafford, Esq., M.P.	Sir James Clark, Bart.
Colonel Sir H. K. Storks, K.C.B.	J. R. Martin, Esq., F.R.S.

President, the Right Honourable SIDNEY HERBERT, M.P.

Major-General Lawrence, C.B. examined.

Major-General Lawrence, C.B.

12 June 1857.

3885. (*President.*) You have commanded a regiment for some years ?—Yes ; the second battalion of the rifle brigade, for about nine years.

3886. You have had, I believe, very considerable experience of the internal economy of a regiment ?—Considerable.

3887. Have you turned your attention much to the soldier's ration ?—Yes.

3888. Do you think that the present ration, speaking of the ration provided by the Government, is sufficient for a man?—I think that three-quarters of a pound of meat is sufficient, provided it is of the quality which is generally issued in England; but I think that the allowance of bread is insufficient, inasmuch as a man almost invariably purchases half a pound himself, in addition to the pound.

3889. So, that including their messing, they consume a pound and a half of bread a day ?—Yes.

3890. What is the relative value in quantity of the bread as compared with biscuit ?—I am not positive.

3891. Are the means afforded for cooking, in your opinion, adequate ?—No.

3892. In hospitals and barracks, what are the means of cooking ?—The only means of cooking is by boiling; there are no means either of roasting or of baking.

3893. Do you think that there ought to be ?—It is essential that the men should have some means of varying their cooking by roasting or baking.

3894. Do you find that the men complain of the monotony of their food ?—Yes ; and the old soldiers do not consume all their rations in consequence of the monotony of having it boiled, and they make very great efforts to cook otherwise ; sometimes they cook in the barrack rooms, which is contrary to the regulation, but it is occasionally done under the rose to obtain that variety by frying and stewing ; and experiments are now making in some of the barracks and at Aldershot, where they have got a baking range put up in the cook house.

3895. Then the fault, I suppose, is that there are no means of giving the men any variety of cooking ?—Yes ; you cannot do it.

3896. Therefore your answer refers only to barracks where there are kitchen ranges and so on ?—Yes.

3897. Supposing they had the means of cooking in different ways, baking as well as boiling, is any change necessary with regard to the cook ?—I think that the custom in the service of changing the cooks is a good one ; on the whole the men prefer a standing cook.

3898. (*Mr. A. S. Stafford.*) Why do you think that the other arrangement is preferable ?—Because you are not then dependent upon one or two men. One man may go to hospital, and you may have no cook ; whereas, if they all take their turn, you have a greater number to go upon.

3899. (*President.*) Do those men whose turn it is to cook get any relaxation from duty ?—They do no other duty.

3900. For how long a time does each man cook ?—From sunrise to sunset.

3901. And on that day the man who cooks is not on parade ?—No ; he does no other duty.

3902. Still the men prefer having their permanent cook ?—They certainly prefer it in the field, where there are greater difficulties ; but under the ordinary system of barrack cooking, which is so easily managed, the men, I think, would be satisfied to have it done in succession ; and there is an advantage in that, because many men are practised in cooking.

3903. Does one man cook much better than another ?—There is very little scope for talent in boiling and making soup, for there is but one dish to cook all the year round.

3904. Do the men ever complain that the cooking is not good, or of a particular man ?—Yes ; and if he neglects his duty he is immediately brought forward by the men of the company and punished.

3905. Then you would prefer leaving the present system as it is, except that in the field you think that they would be better off if they had a permanent cook to each company ?—Yes ; but that is a thing which I should leave to the discretion of the commanding officer.

3906. Is the camp kettle a good one for cooking ?—The one that we had in the Crimea was of a very bad shape, and very inconvenient.

3907. In what way ?—It was so awkward to carry on a man's back.

3908. (*Mr. J. R. Martin.*) The men threw it away, did they not, soon after landing at Eupatoria ?—Yes, particularly before and after the Alma they threw the kettle away ; but I think that was in a great measure from the awkwardness of its shape, it so encumbered the men.

3909. (*President.*) Was it the old-fashioned kettle, the one that had been a long time in the service ?—It was the same shape as the old Flanders kettle, but of a smaller size.

3910. What would you substitute for it ?—I should substitute a camp kettle of the shape of the French one.

3911. The Crimean kettle is still used by our troops, is it not ?—It is not used now ; in time of peace we do not use the camp kettles.

3912. Not at Aldershot ?—No.

3913. Not in the summer, when the troops are there ?—In all probability the camp kettles will be used ; no doubt they will send the troops out to cook, and they may by that time possibly have provided a new camp kettle. I only speak of what we had in the Crimea.

3914. Would you extend to all barracks the cooking apparatus now used at Aldershot ?—Certainly the means of cooking. I would also give the men a couple of frying pans to each room for use, not for use in the barrack rooms, but in the kitchen, on the hot plate which is now part of the range.

3915. Is it a good range which they have at Aldershot ?—Yes ; the new ranges are fitted throughout the camp.

3916. (*Mr. A. S. Stafford.*) On one system ?—Yes.

3917. (*President.*) Are they in the cooking huts ?—Yes, and they are a great improvement upon the old.

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3918. (*Mr. A. S. Stafford.*) Do they do anything but boil?—No; they have no frying-pans or means of baking.

3919. (*President.*) Can they bake?—A new range has just been put up which enables them to bake as well as to boil.

3920. Where is that done—in the huts?—In one of the kitchens.

3921. Has it been put up experimentally?—Yes.

3922. You have a good opinion of it?—Yes; I think it will answer admirably.

3923. Would you give the men the means of baking bread?—That would be afforded by the range I speak of.

3924. Would it be a good thing that they should get used to baking bread?—Yes; it would be very useful in the field.

3925. When you were commanding the rifles had you much occasion to observe the way in which the barrack and hospital repairs were effected?—Barracks particularly, and hospitals also.

3926. Are the repairs done as expeditiously as you think they might be?—Quite the reverse.

3927. (*Mr. A. S. Stafford.*) And as cheaply as they might be?—I cannot speak to the expense—I know little about the comparative expense.

3928. (*President.*) But you can speak to the time occupied?—Yes; and of the very vexatious delay that has often occurred in the repair of barracks and hospitals.

3929. What do you suppose was the cause of that?—From having to pass through two departments—first, the barrack master's, and then the engineers' department.

3930. It has been stated to the Commissioners that the practice is that the barrack-master inspects once a month, and then takes with him all the requisitions for repairs then necessary, are those executed tolerably quickly?—No, certainly not.

3931. And then if a fresh want is discovered the day after his examination must not that stand over till the next monthly visitation?—No, that is open to an "immediate" requisition; but the "immediate" requisitions are very frequent, and very frequently not complied with. In short, the delay in the execution of the repairs is proverbial, and is often very vexatious.

3932. With regard to the ration you said that you thought it was sufficient if the meat was as good as that which is supplied at Aldershot. Have you ever been quartered in Ireland?—No.

3933. At present the soldier is stopped, in England, 4½*d.* for his rations, and a further sum not exceeding 4*d.* for his washing and messing, do you think it would be possible or advisable that instead of making that division the government should make but one stoppage, and that the soldier should be supplied not only with meat and bread, but with everything necessary for his other meals?—I consider that by making one stoppage for the ration and the messing the soldier would be a gainer.

3934. Would you extend that to men on board ship?—I would make it a uniform rate of stoppage, at home, abroad, and on board ship.

3935. In order to make it quite even you would have to alter the rate of pay at home, so as to make it the same at home and abroad?—Yes—in the same way that the ration is altered at present.

3936. So that there should be the same balance due to a man whether at home or abroad?—Yes, exactly.

3937. He should have a certain balance of pay and a clear ration?—Yes, precisely.

3938. Do you think that that would be acting fairly by the soldier?—Quite so; because the warrant authorizes a stoppage, not to exceed 8½*d.*, for rations, messing, and washing.

3939. Have you ever had any practical experience of such a system?—The only thing resembling a stoppage of that sort was, when my regiment, before I commanded it, was stationed in Halifax, in 1841 or 1842, when there was a difficulty in procuring vegetables for the regiment, and the commanding officer made a contract with a tradesman to supply them, at a certain rate, with all their groceries and vegetables, and this succeeded so well, that it was continued during the whole time the regiment remained there, and, I believe, with the same tradesman, for about four years.

3940. Did the men like it, or dislike it?—In the first instance they rather grumbled and objected to it, but only in the first instance—afterwards they were perfectly satisfied

3941. The advantage of that would be, that you would have, when a war breaks out, no change of system to make, either as to the ration or the stoppage?—Yes, and that would be a decided advantage.

3942. Did you suffer much from the change in the late war in the East?—It caused confusion in the accounts, and the old system could not be carried out.

3943. Could the men with their messing money purchase things; was there any market where they could purchase what they required?—In Bulgaria they were able to purchase things to a certain extent.

3944. And even there, there was a change made in the ration and the stoppage, on account of their inability to supply themselves with all that they required?—Yes; after a time.

3945. Even there it broke down?—Yes; and afterwards in the Crimea it broke down entirely.

3946. Do you not think it would be a very great advantage that there should be no change from peace to war, or as little change of system as possible?—It would certainly be a great advantage; the fewer changes the better.

3947. You are of opinion that that would simplify the accounts?—Yes; there would be the one stoppage, and a part of the money transactions between the soldier and the pay sergeant would be done away with.

3948. You might almost say that there would be no stoppage, but that the balance remained the same?—There would be only one stoppage for the ration, and every man would know his balance.

3949. (*Sir H. K. Storks.*) Does not the commanding officer mess his regiment up to the full sum allowed by the regulation?—Not on all occasions; there are regiments at Aldershot where they are messing the regiments at a halfpenny under.

3950. (*President.*) Usually the commanding officers like to mess them up to the full sum for the sake of the discipline of their regiments?—Yes; as long as the men get a good meal (and they complain if they do not get a good meal) you are satisfied. As to the rate of messing, I never wished to spend any more money for my men than was necessary. I never went on the principle of spending the money for the men; as long as they were well messed, I let them have as much money to spend as I could.

3951. Would you extend that uniform stoppage to the hospitals or not? In peace, for instance, would you bring down the present hospital 10*d.* stoppage to 8½*d*?—I do not think that the present hospital stoppage is too high or an unfair one, except with respect to the married soldier.

3952. Do you think that you could possibly deal with the married soldier differently from the way in which you would deal with the unmarried soldier?—Yes; you acknowledge a certain number of married soldiers, and you should, I think, adequately provide for them.

3953. That is, you should give them proper bedding and accommodation of that kind, but can you give to a man a different rate of pay, for making a different stoppage is altering the rate of pay?—If he is in the hospital under the full stoppage, his family must almost starve.

3954. But still when you are dealing with a soldier you are buying his services as a soldier, and not his services as a bachelor?—Very true, but you acknowledge a certain number of married soldiers.

3955. (*Dr. A. Smith.*) Do you not at present deal differently with the married and the unmarried soldiers—for instance, the married soldier is not required to take the ration that the unmarried is required to take—he is allowed money to provide for himself and his wife?—Yes.

3956. (*Mr. J. R. Martin.*) Is not the condition of the married soldier rather one of advantage *per se*, inasmuch as the wife washes and assists him in various ways?—Certainly there are many advantages from the regiment, but without those advantages they could not subsist.

3957. In India, are you aware, that the wife receives eight rupees a month?—No, I was not aware of that.

3958. (*Sir H. K. Storks.*) And she gets half a ration abroad?—Yes.

3959. (*President.*) Would it not be dangerous to deal in a different way as to pay and stoppages with one class of soldiers from that in which you deal with another?—No, I do not think it would, so long as you recognize only a certain number of married soldiers.

3960. His rate of pay is supposed to be equivalent to the sort of service which he gives, and whether he is married or single his service is the same—why then should you pay him differently?—The reason I gave before was that you recognize him as a married man, and if you make that large stoppage from him, his family must starve, or next to it, while he is in hospital.

3961. (*Sir H. K. Storks.*) Then you would only give this reduced stoppage to a man who was married with leave, and on the strength of the regiment; that is, six with each 100 men?—Certainly, to that proportion.

3962. Not to all those who receive the commanding officer's permission to marry?—No, it should be limited to that proportion.

3963. (*Mr. J. R. Martin.*) The married soldier is not now made to draw his ration?—It is optional.

3964. When he goes into hospital he must draw it?—He is rationed there.

3965. Therefore you must have a stoppage equivalent to the stoppage for the ration even from a married soldier in hospital?—Yes.

3966. You could not go the length of giving him a free ration because he is married?—No.

3967. On board ship, do you think the same stoppage might hold good?—I would take away the allowance of spirits, which I think does much harm.

3968. On board ship the soldiers mess separately from the seamen, do they not?—Always.

3969. So that there never would be a comparison of the one having a ration with spirits, and the other having a ration without it?—No; they always mess separately. Besides, the one man is working, and the other is comparatively doing nothing.

3970. (*Sir H. K. Storks.*) Do you not think that the spirit ration is a very bad thing?—Very bad.

3971. Except under very special circumstances?—I never knew any occasion on which I considered that anything but evil resulted from the ration of spirits, except in the case of the great state of suffering of the troops in the winter of 1854, in the Crimea. That was the only time that I ever thought it was advisable to give them spirits, in my experience. In other respects I look upon it as an unmixed evil.

3972. (*President.*) Do you believe that the men on board ship contract the habit of taking the spirits, and that they do not shake it off afterwards?—Yes, I do.

3973. You put the temptation in their way?—Yes. There are many young soldiers going out to the colonies who have never tasted rum.

3974. (*Mr. J. R. Martin.*) Would it not be an advantage in the case of a recruit to withhold the spirit ration from him, giving him compensation in other ways?—You could not withhold it from one class and give it to another.

3975. In respect to young soldiers, who are most injured by it, would not that be advisable?—I do not think that you could draw the line.

3976. (*President.*) You might give them tea or coffee, or something in its place?—Yes, I would give them additional tea or coffee.

3977. I think you stated that one of the advantages of a uniform stoppage, besides simplifying the accounts, would be that a better article would be provided, and cheaper?—I certainly think a better article.

3978. Do you think that the commissariat generally do better for the men than the men could do for themselves?—Decidedly. But with all the checks that we have under the present system in buying vegetables and groceries for the men, there is no doubt that it is open to a certain amount of peculation. They bribe the non-commissioned officers who are entrusted to purchase those things for the men.

3979. And they buy an inferior article?—They get a per-centage either in money or in kind. If it is done by the sergeant he gets a per-centage in money, I have no doubt; and if a corporal and a man go to buy those things, they get either a glass of grog or a piece of soap as a bonus to induce them to go to that particular tradesman.

3980. And the tradesman then supplies them with an inferior article?—The troops keep a pretty good check upon that; but they would get better served if it were otherwise.

3981. (*Sir H. K. Storks.*) Would there not be another advantage in certain climates, namely, that you would be able to put some restriction on the diet of the soldier—that is to say, on the vegetables that he eats in tropical climates.—There is no reason when they go out why they should not buy melons or cucumbers, whereas you might regulate what the ration was to be, and give them something more conducive to their health?—Yes, certainly; though I, as commanding officer, would not allow them to buy any vegetables or groceries which my surgeon objected to.

3982. You stated that your men at first were dissatisfied with that system in Canada of supplying them with the whole ration and the messing for three meals—do you think that there would be any disatisfaction felt now if that system were introduced?—Yes; at first there might be. There always is upon any change a certain amount of disatisfaction, but I believe after a time the men would feel satisfied with it.

3983. Have you ever consulted any person upon that subject?—I have put the question to several non-commissioned officers and men, and without any exception they have approved of the principle, although they admitted that their comrades might raise an objection and grumble, as they would upon any change; but they were quite satisfied that it would be advantageous to the soldier.

3984. Would you include washing as well as the food in the whole stoppage?—No; for that would take away the legitimate employment of the married people.

3985. Is it not an advantage for the men to wash for themselves?—It is an advantage that the married women should be employed in that way, otherwise it is thrown into the hands of the lowest description of people. This has been the case at Aldershot; we had not a sufficient number of married people at first, and it fell often into the hands of prostitutes, and people of the lowest description, and it gave them an entrance into the camp.

3986. Cannot the men wash for themselves?—In the field they can perfectly.

3987. But at Aldershot?—They could do it, as they have done it in the field, but I do not think there is any reason why they should.

3988. Is there any good reason why the men should not wash their own clothes?—It has not been tested at Aldershot; because when they returned from the Crimea there was a certain number of women, and,

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according to past precedents, the clothes were put into their hands to wash.

3989. (*Mr. A. S. Stafford.*) Do you see any objection to the men washing for themselves?—No; but I think it is desirable that there should be a certain number of married women in every regiment, not only to wash, but for the moral good of the soldiers; and if the men wash for themselves, it would deprive the women of their chief means of support.

3990. (*Mr. J. R. Martin.*) You think it is desirable that the soldier should do for himself everything that he can do without injury to his health and discipline?—I think it desirable to acknowledge and to admit a certain number of women in every regiment. You cannot prevent soldiers marrying altogether, and I think it is better to acknowledge a certain number of women and to maintain them respectably; and one great means of maintaining them respectably would be by washing for the soldiers.

3991. (*President.*) Therefore, though you think that the men should be able to wash for themselves, there ought to be washing enough to keep in employment the women in the regiments?—Yes.

3992. (*Sir H. K. Storks.*) Would it not be a good thing, as Aldershot is considered a camp of instruction, for the men to wash their own things instead of employing women?—I do not think that they require any instruction upon that; every soldier can wash his clothes.

3993. (*President.*) Should you include necessaries in the things to be supplied to them, or would you let them go on buying their necessaries themselves, as they do now?—I think that a soldier would be quite as well supplied, if not better, during a time of peace; for in time of war the system of supplying them regimentally falls through.

3994. What happened in your regiment during the war?—I took out a certain quantity of necessaries, shirts and socks, which I was enabled to carry with the regiment as far as Scutari; beyond that I could not obtain the means of transport, and the greater part of the necessaries were left at Scutari; and at last I was entirely dependent upon the government. At the same time there was the inconvenience of having to write to England for stores for the regiment, without knowing what the destination of the regiment would be.

3995. Latterly did the commissariat issue the necessaries?—Certain articles were issued gratuitously through the quartermaster-general.

3996. As army stores?—Yes.

3997. And the men equally purchasing them?—A great portion of them were issued gratuitously. Trowsers were given to the men, and flannel shirts from private sources, and the necessaries which were afterwards sent out for the regiment remained in hand at great inconvenience.

3998. With regard to shirts and things of that kind, did they keep up their stock by their own resources, or were those issued gratuitously?—I do not think that shirts were ever issued gratuitously; they had to come from regimental sources; Jerseys were. I wanted to explain that there was a necessity laid upon the commanding officer to send for those supplies; but in the meantime the wants were often anticipated by gratuitous gifts of the Government, and from private sources.

3999. Still the system of supplying the men regimentally was an entire failure?—It was; it cannot be carried on.

4000. Therefore, you think it would be better that the men, instead of supplying themselves by regimental contracts, should purchase of the commissariat at all times?—Yes; but I would leave the soldier the liberty which he has at present under the regimental contracts of purchasing for himself, providing he can do so equal to the established pattern.

4001. Only that there should be a supply, from which he can purchase if he likes, provided by the Government?—Yes, with liberty to purchase in the town, if he liked.

4002. (*Sir H. K. Storks.*) With the consent of the captain of his company?—Yes.

4003. (*President.*) The change would be this, that you would substitute the Government contract for the regimental contract?—Yes.

4004. What per-centage of soldiers do you think ought to be allowed to marry?—Six per cent. I think there is no limit as to the number who are allowed to marry; but there is a limit as to the number who are allowed to embark on board ship, and the same limit for the number of rations issued abroad and on board ship, which is the same, 6 per cent.

4005. What advantage has the wife of a soldier who has been allowed to marry, but who does not come in among the number who have half rations?—She is no better off if she is above the number; she would succeed to a vacancy.

4006. Are the regulations enforced upon this head as to marriage?—They are not strictly enforced as to not granting any indulgence to those who have married without permission. The regulation states, that under no circumstances shall soldiers who have married without the consent of their commanding officers be allowed accommodation for their wives in barracks, or to participate in any of the advantages given by the regulations of the service. These regulations are not enforced.

4007. In what respect are they broken through?—In this, that soldiers who have married without permission are taken upon the strength of the regiment, and receive the advantages of those who have married with leave. Virtually it is left to the discretion of the commanding officer.

4008. And you think that evil results from that?—Great evil.

4009. In what way?—In consequence of a man who has married without leave being taken upon the list, the commanding officer has not the power of granting the indulgence of marrying to men of good character.

4010. Why is that done?—It is done from carelessness, and from want of attention to the importance of the subject.

4011. So that you think that the regulations whether revised or not, ought to be at any rate strictly enforced?—Certainly; I think that no soldier ought to be permitted to marry, that is to say, that the indulgence of married soldiers should not be granted to him until he is in possession of one good-conduct badge, which involves a service of five years; and that he should not be granted the permission to marry until he had registered his application for either three or six months; and that the commanding officer should not allow any man, who had married before he entered the service or without leave, to be placed on the strength of the regiment, as a married man, without the sanction of the Commander-in-Chief.

4012. That is, that he should not take any married recruit?—A married recruit would not be accepted, but a number of them get into the army by swearing that they are not married; the army is full of married men now.

4013. (*President.*) Is there sufficient accommodation provided for those who have married with permission, in barracks?—Certainly not; but in the new barracks they are making provision at the rate of six per cent.

4014. That is the number to which you would adhere; enforcing the regulation instead of allowing it to fall into disuse?—Yes; at present the lowest description of women come eventually on to the strength of the regiment, and misery and suffering among the married people is the consequence.

4015. (*Sir H. K. Storks.*) Is not permission generally given to a certain number of married soldiers to reside out of barracks?—Three per cent.

4016. Then that makes nine per cent. in a company of 100 men?—Three per cent. are allowed to live out of barracks, at an allowance of 2*d.* per day.

4017. Six in barracks and three out of barracks?—Yes.

4018. (*President.*) You have turned your attention, I believe, a good deal to matters which are considered necessary for the health of the men, such as the means of recreation within barracks?—Yes.

4019. Do you think that there are means enough of recreation for the soldiers?—No, I think they are miserably defective: there are hardly any means of recreation either for officers or men.

4020. Such as racket courts and ball courts, and so on?—I think they are very defective.

4021. Are there any at Aldershot?—At Aldershot in the encampment there are two ball courts in each of the camps—four altogether.

4022. (*Mr. A. S. Stafford.*) Are they enough?—No; there are now at Aldershot in round numbers about 14,000 or 15,000 men.

4023. And four ball courts?—Yes; but I think that each regiment should have its ball courts.

4024. (*President.*) Is there any cricket ground?—There is one cricket ground which was laid down last year, and is not fit for playing on at present. £100, I believe, has been put in this year's estimates for making another, and that will go no way at all.

4025. And 1,000*l.* are voted for a racket court?—Yes, in the permanent barracks; therefore there would be only one racket court for the permanent barracks and the camp.

4026. The racket court, I suppose, is not used by the men?—No, it could not be used by the men.

4027. It is too expensive?—Yes. Soldiers can never play rackets.

4028. Is one racket court sufficient for the officers?—No, I suppose there are 500 or 600 officers at present at Aldershot, and even in the winter establishment there would be nearly half that number.

4029. Do they ever go over to Sandhurst to play there?—The officers are constantly in the habit of driving over to Sandhurst, which is seven miles off; and the same want is experienced in all the colonies where I have been. I was in Canada for five or six years, and at every station I made efforts to obtain a ball court for the men, but I never succeeded in any one case. As commanding officer I reported the thing and the want of it, but I never succeeded either at Quebec, Kingston, or Montreal.

4030. To whom did you report it?—Through the usual channel.

4031. Did you apply to barrack department?—To the quarter master-general's department through the general officer, and very often a ball court got into the estimates, but it was never done in my time.

4032. Do you approve of garrison libraries?—Yes, very much.

4033. Is there merely a press in which the books are kept, or is there a room where the men can read?—There is a room where the books are kept, but there is no inducement to the men to sit down to read there. It is indifferently lighted, and it is merely a place for keeping books, and from which to issue them—not a reading room.

4034. Are you speaking now of a regimental library or of a garrison library?—I am speaking of a garrison library. There is no prohibition against the men reading there, but there are merely a few forms and tables, and the room is indifferently lighted—so that, practically, the soldiers do not use it as a reading room.

4035. (*Sir J. Clark.*) There is no fire in it, is there?—Yes, there is.

4036. (*President.*) What is the allowance of light?—It is the same as in a room for 12 men.

4037. (*Mr. A. S. Stafford.*) How much is that?—Half a pound the spring allowance, and a pound and a quarter during the winter.

4038. Of candles?—Yes.

4039. (*President.*) Two dips are allowed, I believe?—Yes, about two candles. There is sufficient light to read by, but not sufficient light to make it attractive.

4040. Where there is a reading room, does the soldier attend it, or does he seem to like it?—The 12 regiments at present at Aldershot have all regimental reading rooms.

4041. (*Sir H. K. Storks.*) Are they well attended?—There is an attendance of 1,833 out of a strength of 9,500 men.

4042. (*President.*) Do you mean subscribers?—Yes, the subscribers to the regimental libraries are about 20 per cent.

4043. How was the regimental library established at Aldershot?—In one of the huts.

4044. Is a hut set apart for the library?—It is granted either by the barrack-master as a favour, or the commanding officer puts aside a hut out of the barrack accommodation which is allotted to him for the regiment.

4045. Then he is obliged to pack his regiment a little closer, in order to spare that hut?—Yes.

4046. That is a disadvantage, is it not?—I do not think that it leads to crowding the men as a rule, or that the men suffer from it, but it is certainly taken out of the quarters allowed.

4047. How many men do those huts hold?—They are appropriated for 22 men.

4048. But they would hold more as a reading-room?—I should think double that number of men could sit there if there were forms and tables. The room only has its ordinary complement of four forms and two tables.

4049. Just enough to seat 22 men if they were all there?—Yes, only they usually borrow. This room is not sanctioned by the regulations in any manner.

4050. Do you not think that it ought to be?—Most decidedly. I think that every regiment should have its reading-room.

4051. You say that there are 1,833 subscribers out of 9,500 men. Do the numbers vary in different regiments very much?—Yes. In the Coldstream Guards, out of a strength of 750, there are 350 subscribers; and in the 2d battalion of Rifles, out of a strength of 700 men, there are 256 subscribers. But then it should be remembered that these regiments have libraries of their own.

4052. Have not the others?—No.

4053. Have not all the regiments libraries of their own?—No, not soldiers' libraries.

4054. Why is one regiment to have it and not another?—Regiments are generally deterred from having libraries on account of the expense of carrying them about.

4055. (*Sir H. K. Storks.*) You mean private libraries?—Yes; I was drawing a distinction between garrison libraries provided by the public and the libraries that I spoke of, which are purchased by the soldiers.

4056. (*President.*) Surely the public provides regimental libraries as well as garrison libraries?—No.

4057. (*Mr. A. S. Stafford.*) Can you state the smallest proportion of subscribers in any regiment?—The smallest number of subscribers of any of the 12 regiments is 76.

4058. Out of how many men?—Out of 780.

4059. Which regiment is that?—That is the 22d.

4060. Was that regiment about to move?—It has only just arrived in camp at Aldershot.

4061. (*President.*) That would make a difference, would it not?—Yes, I think so. It should be borne in mind that all regiments coming into Aldershot are expecting to move. My opinion is that if these regiments were stationed in a garrison where they had the prospect of remaining any time, the number of subscribers would be very much increased.

4062. Have they no lamps in any of those huts?—They have never been recognized, but during the last winter a special application was made for light, and the use of two moderateur lamps has been granted.

4063. In the garrison library?—No, at the regimental library. Two lamps were granted during the winter.

4064. Has it not been extended to the spring and summer?—No.

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4065. Were they sufficient to light them ?—I should think so.

4066. (*Mr. J. R. Martin.*) Have the men any theatrical amusements ?—Nothing. The officers have had private theatricals, and a large hut is set apart for them.

4067. But none for the private soldiers ?—No ; I do not think there is for the private soldiers. They attend and witness the private theatricals of the officers, but there is no place set apart for the men.

4068. (*Sir H. K. Storks.*) Have there been any lectures given at Aldershot?—Yes, throughout the whole of the winter.

4069. Were they well attended ?—Yes, decidedly.

4070. On what subjects were the lectures ?—They were very varied, scientific ; natural history, astronomy, &c.

4071. And on military subjects ?—Some on military subjects also.

4072. Were they well attended ?—Yes.

4073. (*Sir J. Clark.*) What is the amount of subscription that the soldier pays ?—On the average about 3*d.*, and 1*d.* for the garrison library.

4074. For how long a time ?—A month.

4075. (*President.*) How are those subscriptions applied ; how is the money spent ?—In lighting the room, and providing extra light, papers, and periodicals.

4076. They get additional light beyond the two dips ?—Yes.

4077. What is the regulation as to the newspapers ; do they get any newspapers that they choose ?—Subject to the approval of the commanding officer.

4078. (*Sir J. Clark.*) Do the government choose the books which are supplied ?—Yes, for the garrison library ; and the books or newspapers for the regimental library are allowed to be introduced subject to the approval of the commanding officer.

4079. (*Sir H. K. Storks.*) That is quite a regimental arrangement ?—Quite so.

4080. There is no regulation in the service authorizing the admission of newspapers into the regimental libraries ? — No ; they are not recognized by the regulations of the service.

4081. Is there any regulation in the service prohibiting the admission of newspapers ?—No, not that I am aware of.

4082. Do you see any danger in their admission into the regimental libraries ?—On the contrary, I think it most desirable that newspapers should be introduced into regimental and garrison libraries.

4083. Why so ?—Because the troops in the present state of things are flooded with all sorts of newspapers of the lowest and worst description, and I think it most desirable that they should be supplied with newspapers and periodicals of a good moral tendency in order to counteract the evil effects of the publications which they not only meet with at all the public-houses, but which are sent to them in such numbers by their friends.

4084. (*Sir H. K. Storks.*) You do not think that the admission of a good wholesome newspaper would have any dangerous effect on the discipline of the army ?—Quite the contrary.

4085. You know that soldiers receive very objectionable publications and prints from their friends ?—Most objectionable.

4086. (*President.*) What are those objectionable prints ; are they penny papers ?—Yes.

4087. (*Mr. J. R. Martin.*) Your view is, that as the men will read something, care should be taken to provide them with the best ?—Yes ; in order to counteract the effects, not only of the radical, but of the infidel publications which are disseminated amongst them.

4088. (*Sir H. K. Storks.*) You are of opinion that it would be better that those newspapers should be allowed by regulation under some legitimate control, than that the men should read all sorts of questionable publications ?—Certainly.

4089. (*President.*) You cannot prevent access to the others, but you think that the men would prefer to read a good article if it were put before them ?—Yes, if it were provided for them in the garrison library.

4090. (*Sir J. Clark.*) Who takes care of the regimental library, and issues the books to the men ?—A librarian is appointed from among the men.

4091. (*Mr. J. R. Martin.*) Would you encourage men who have practised trades to pursue them for their own benefit at the different stations ; that has been found beneficial in the East Indies with European troops ?—Yes ; I dare say that can be done in the East without taking them away from their duties as soldiers.

4092. They are encouraged to cultivate small gardens, and to dispose of fruits and vegetables for their own benefit ; and all those indulgences have been found to diminish both sickness, mortality, and crime, especially in the European regiments of the East Indian Company ; should you approve of such indulgences ?—Yes, if it can be done ; but I should question whether in temperate climates, where a soldier is called upon to perform so many more duties than in the East, it would not interfere with his duties as a soldier.

4093. But where it could be done, you would be disposed to approve of it ?—Certainly. With regard to what I said as to the newspapers, I beg to add this, that all newspapers issued to the garrison libraries should be selected by the monthly board of officers from a list approved by the Secretary of State for War.

4094. (*President.*) You stated, that accommodation was being provided for married women in barracks ?—Yes, in the new barracks at Aldershot.

4095. What space is given to each ?—11 feet by 10.

4096. For each couple ?—Yes.

4097. (*Sir H. K. Storks*) Do they have a separato room ?—Yes ; with a small oven beside the fire-place.

4098. Is that accommodation provided in the proportion authorized by the regulation, of six women to 100 men ?—Yes.

4099. Has it ever occurred to you that it would be possible to build in the rear of barracks a sort of model lodging-house which might be let out to married soldiers at a weekly rent ?—I think that would be a decided advantage, as it would provide respectable accommodation for them, and move them away from the men.

4100. And you would keep them more under regimental control than you could do now ?—Certainly.

4101. Do you think it would be popular among the men, that they should pay a small weekly rent, to be fixed by a board of officers ?—Yes, and they would be better and more economically lodged, instead of straggling about a town and getting wretched accommodation.

4102. And you would keep them more under regimental control ?—Yes.

4103. (*President.*) Do you know the Guards' lodging-house for married soldiers ?—No.

4104. Have you ever contemplated selling coffee and so on in the garrison libraries ?—I have known coffee sold in a regimental library abroad ; in Canada, it succeeded very well.

4105. Do they ever smoke there ?—In some regiments it is prohibited by the men themselves, but in the majority it is allowed in the regimental library huts

4106. You think that the garrison libraries should all be made into reading rooms as well ?—Yes.

4107. And that they should be supplied with newspapers, and so on ?—Yes ; they are already supplied with a certain number of periodicals, but I think the great attractions to a library are the newspapers.

4108. (*Sir J. Clark.*) Does one man read out to the others ?—No, not commonly.

4109. (*President.*) If you made the garrison library as good as that, would it interfere with the regimental library ?—Not materially.

4110. Do you find that the regiments which subscribe most freely to the one subscribe to the other too?—Yes; in my own regiment, when there has been the greatest number of subscribers to the regimental library, there has been a proportionate subscription to the garrison library instead of taking away from the numbers.

4111. Have you any change to recommend with regard to the supply of newspapers, or would you leave that as it is, in the discretion of the commanding officer?—So far as the regimental libraries are concerned, I would suggest that if the garrison library is situated upwards of half a mile from the regimental one, or if no garrison library exists, that the regimental library should have the privilege of drawing periodicals and newspapers, and have an allowance of light in the same way as I proposed for the garrison library, of course paying the same subscription.

4112. You would proportion the number of papers to the number of subscribers?—Yes.

4113. With regard to the canteens, would you make any change in the regulations with respect to them?—I am not prepared to make any suggestion as to them.

4114. They are now, I believe, under a very improved system, and they do not sell spirits?—Yes.

4115. (*Sir H. K. Storks.*) Would it not be desirable to have a comfortable public room attached to each canteen, where the men could have coffee or tea and smoke their pipes and converse?—It would be a great attraction.

4116. Do you think it would be attended with good results?—I think it would, but I would attach the room that you describe to the reading room.

4117. (*President.*) So that they would be able to smoke and get coffee just the same?—Yes.

4118. And they could read there too?—Yes, it has been tried in several garrisons.

4119. (*Sir H. K. Storks.*) With success?—Yes, and we are about to try it at Aldershot.

4120. (*Sir J. Clark.*) If the men had an opportunity of getting coffee early in the morning it might prevent them from taking spirits?—Yes, it would, and it would be a great help to a man who wishes to give up dram drinking to have a cup of coffee to fall back upon.

4121. (*President.*) Can you offer any suggestion as to any improvement in the clothing?—I think the soldiers' boots are open to great improvement. It is essential on service that a man should have either leggings of the same description as those worn by the French,——

4122. A pair of gaiters?—Yes, or a laced boot sufficiently large to admit of the trousers being put inside; more like the English shooting boot, so that you might put the trousers inside and lace the boots over them; and the want of that was shown by the expedient that the soldiers resorted to in the Crimea, who made a sort of legging out of the material of which the bales were made containing the clothing, a sort of sacking; every man in the trenches had them on, and it was a great protection.

4123. With regard to the shako, have you any improvement to suggest?—I think it is essential to consider the appearance as well as the comfort of the soldier; with regard to the shako I am not prepared to recommend any other head-dress as a substitute for it. On taking the field I would send the shako into store, and depend entirely upon the forage cap.

4124. (*Sir H. K. Storks.*) Would not you change the forage cap, and give it a peak?—I do not think the peak is of much value.

4125. Do you like the material of the present forage cap?—Yes, I think it is serviceable; if it were a little larger it would be better.

4126. Is it not very difficult to keep it in shape, uniform?—No, I do not think it is.

4127. (*President.*) If you have a peak do you prefer the English or the French peak?—Certainly the French. The old English peak did more harm than good. It came down upon the nose and caused heat without protecting the eyes in the least.

4128. (*Sir J. Clark.*) Would not a peak protect the eyes in summer weather?—I take the instance of three regiments in the brigade that I commanded at the latter part of the time in the Crimea; two of them had had peaks throughout the whole campaign, and one of the regiments, the 47th, had a great many cases of ophthalmia; the 41st had no peaks during the whole campaign, and I do not think that they had a single case of ophthalmia.

4129. There were two regiments with peaks?—Yes, very much of the French pattern. The 47th and 49th had very good peaks during the whole campaign.

4130. And one of them had cases of ophthalmia?—Yes, the 47th; but the 41st were without peaks and had no cases of ophthalmia.

4131. (*President.*) The ophthalmia did not prevail in both the regiments which had peaks?—No, in only one.

4132. (*Mr. J. R. Martin.*) What are the advantages of the forage cap over the shako?—That a man can put it under his head, and it is not liable to be destroyed; whereas if you rest your head upon the shako you destroy it, and it is spoiled by the mud, and is very inconvenient both under canvas and in bivouac.

4133. Is there any head-dress that fulfils the object of the soldier being able to lie down with it, and its being to a certain extent sabre and bullet proof at a given distance?—No, I know of no head-dress that combines these qualities.

4134. But these are the objects aimed at in the soldier's head-dress, are they not?—Not so much protection from wounds as protection from the weather.

4135. Would not a light kind of helmet fulfil those objects more than any other head-dress?—Do you mean made of felt?

4136. Yes.—I am doubtful about the helmet; I think it would be very hot.

4137. They are made now, I believe, with ventilating openings?—I think it would be liable to the same objections as the shako on service, as being very easily destroyed.

4138. Military men have never as yet agreed upon the one head-dress proper to the foot soldier; it is still a desideratum in the army, is it not?—Decidedly, it is still a very open question.

4139. (*President.*) Would you make any substitute for the stock?—Not on home service. I do not think the leather stock on the whole can be improved upon for home service.

4140. Is it necessary to have it so thick and strong?—I do not think that the thickness makes it less comfortable, it is the height.

4141. Are they reduced from what they used to be?—Yes; they are lower now.

4142. And not so thick?—They are nearly as thick.

4143. On service, what would you recommend?—I would give a handkerchief on service.

4144. That looks very bad, does it not?—I mean a handkerchief that would wash, not the black handkerchief that was issued in the Crimea, but blue like the French.

4145. (*Mr. J. R. Martin.*) Would not horse-hair be more suitable for peace and war?—No; it would chafe the men's necks, and become almost like a rope round their necks.

4146. (*Sir H. K. Storks.*) Does not the stock from its tightness often cause men to fall out when they are marching quickly or doubling?—When a soldier has any really hard work to do, and wishes to use any great exertion, the first thing he does is to take off his stock.

4147. (*President.*) Do you like flannel or cotton shirts?—Flannel.

4148. At all times?—At all times, both on service and in quarters.

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4149. (*Mr. A. S. Stafford.*) Do you think that the knapsack could be improved in the manner of fitting it on to the soldier?—Yes; I think they are improving it at the present time.

4150. Do you know Mr. Berrington's plan?—I am not quite certain that I do by that name, but I have seen almost all of them.

4151. (*Sir H. K. Storks.*) Do you think that socks are essential to a soldier?—Yes.

4152. (*President.*) Would a looser fatigue jacket be a better thing for the soldier?—I should substitute either a jersey frock or a canvas jacket, like the Austrians, for the shell jacket.

4153. (*Sir H. K. Storks.*) Do you think that the present great coat is a useful article?—The quality of the coat is very inferior.

4154. Would not a coat of lighter material be better, in which the men could march, more like the French great coat?—Yes, of a better description of cloth.

4155. And of lighter materials?—Yes; our great coat neither keeps out the wind or the wet.

4156. In the morning, when a man has been out all night on sentry, if he has to march early it is almost impossible, is it not, to fold a wet great coat?—Yes.

4157. And therefore the man is put to great difficulty in carrying it?—Yes; a wet great coat he cannot fold.

4158. (*President.*) Do you think that the tente d'abri could be introduced with advantage into the English service?—Yes.

4159. Not as a substitute for the bell tent?—No.

4160. How would you manage with two kinds of tents, you could not carry both?—I proposed to many of the soldiers in the Crimea, to carry a portion of the tente d'abri, and a piece of waterproof cotton or duck not exceeding 2 lbs. in weight, which should be used as a water deck to lie down upon, or as a cape, or to form a part of a tente d'abri, and they considered the advantages such, that they did not at all object to the additional weight of a pound and a half; the bell tent would be carried for them.

4161. Can you have waterproof cotton for a tent?—We had a great many different materials submitted for trial in the Crimea. I am not certain, but I think it was duck.

4162. Is it the custom in the service, so far as you know, to consult the medical officer in the selection of ground for an encampment?—I should say not. It is left to the discretion of the commanding officer. I should say that the medical officer is not much consulted.

4163. Do you think that he could be consulted with advantage?—Decidedly.

4164. Would it be desirable to attach a medical officer to the quartermaster-general's department in the field, to advise him on points of that description?—Very desirable.

4165. (*Sir J. Clark.*) If such an officer was appointed, would you have him attached to the quartermaster-general's department, without being under the inspector-general?—I should have him independent, and to report direct to head-quarters, to the general commanding.

4166. (*Mr. J. R. Martin.*) Being the officer of health of the army?—Yes, the officer of health attached to head-quarters.

4167. Your view is that to exercise that function he should be kept separate from the class of officers who treat sickness and wounds?—Yes.

4168. And that his duties should be especially sanitary?—Yes.

4169. (*President.*) Would he not come into collision then with the principal medical officer?—I should conceive not.

4170. Suppose that the principal medical officer differed from him as to the salubrity of any particular site?—He would not be an executive officer. The Commander-in-Chief would still be at liberty to take the opinion of the principal medical officer.

4171. (*Mr. J. R. Martin.*) Meanwhile you would consider that this sanitary officer should in all cases be a high authority, on account of his acquirements?—Yes; on sanitary subjects.

4172. (*Dr. A. Smith.*) Knowing, as you well do, the various duties which a soldier has to perform, what number of meals do you think he ought to be allowed daily, to give him sufficient nourishment?—Three meals, breakfast, dinner, and supper.

4173. Of what should the breakfast consist?—Tea or coffee, and bread.

4174. Would you consider that sufficient, supposing that a man may be out from 5 o'clock in the morning till nearly 8, at heavy drill?—I should answer that first, by saying that I do not think it is at all desirable to take them out, if you can avoid it, upon an empty stomach, but to give them their breakfast first.

4175. Then suppose that a man had not been out, but had been moving about for an hour or two, would half a pound of bread and a pint of coffee be sufficient for a strong six-feet man in vigorous health?—Very frequently they buy butter, &c., but judging by the general health of battalions, I should say that the bread and bowl of coffee that the soldier gets are sufficient for him.

4176. At dinner he is allowed three quarters of a pound of meat; probably an ounce of that three quarters is lost by bone, and another ounce by cooking or boiling away in the soup; do you think he would be able to spare any of that, or that he could not eat more than that at dinner?—They frequently dine on the soup and reserve a portion of the meat for the supper.

4177. Could they reserve any portion without robbing themselves of what they really wanted at their dinner?—I should think that they would consume more, and as a general rule that they would desire a larger amount of meat.

4178. Then of what should the evening meal consist?—Tea or coffee.

4179. And bread again?—Yes.

4180. (*Mr. J. R. Martin.*) Do you not think that the meat ration should be increased, so that some portion of the dinner should remain over for the supper?—I have assumed that the three quarters of a pound of meat, if it is as good in quality as it is under the present commissariat arrangements in England generally, and at Aldershot, is sufficient for them.

4181. Leaving some remainder for the supper?—That is quite optional with the soldier. All the meat is cooked at dinner, and if it is kept it is reserved for his supper.

4182. Do you think that the ration ought to be increased when the troops are employed on active service?—Yes.

4183. Have you seen the scale recommended by the Crimean commissioners, and do you approve of it?—I see that the fresh meat is 16 ounces; but the meat generally issued in the Crimea was not worth half the quantity of the meat which is issued at home.

4184. That is a suggestion as to foreign service, and supposing the meat to be indifferent?—The sixteen ounces in the Crimea were not equal to eight ounces of the meat that is given at Aldershot.

4185. (*Sir J. Clark.*) Is it not the general practice of the men now to purchase articles to eat with their breakfast and to eat with their dinner?—It is the general practice to buy a herring or butter, or an egg, and such things; but I look upon it more as a change and a relish than to supply a want of nature.

4186. Do you think that in this climate three-quarters of a pound of meat, losing so much by bone and cooking, is quite sufficient for an able-bodied man for a day's subsistence?—I think that it is a sufficient amount of animal food.

4187. In intense winters in Canada, did you find that the troops required more animal food?—I think not.

4188. (*Mr. J. R. Martin.*) The British ration was the usual ration ?—The ration of meat is one pound in Canada intead of ¾ as at home.

4189. The camp kettles at present in use are only suited for the preparation of soup and boulli, are they not ?—The camp kettle is only suited for that.

4190. (*President.*) Am I right in supposing that when a soldier has been on guard for 24 hours, and returns to his barrack, he is not allowed to lie down in his bed till tattoo ?—Yes.

4191. So that he might be kept without sleep except what he gets upon the guard bed for 36 hours. Could you not do for him what the police do, they allow the men to go to bed for a given time after their return from their beat ?—In hot climates we used to let the men put down their beds and lie down after they had had their dinner.

4192. Do you mean the whole of them ?—Yes.

4193. I referred to a man who had been kept out of bed during 24 hours, would it not be an advantage to him to go to bed for some limited time, instead of waiting till tattoo in the evening ?—The barrack-room hardly admits of that, if the beds were let down in the middle of the day, the men could not have their evening meal.

4194. (*Mr. A. S. Stafford.*) The space would be too limited ?—Yes.

4195. (*President.*) They are eight hours on sentry ?—Yes, and 16 hours off, so that they get a good deal of sleep.

4196. (*Mr. J. R. Martin.*) The duty as sentry being two hours each time ?—Yes.

4197. (*Mr. A. S. Stafford.*) He is always four hours off ?—Yes, and two hours on.

4198. During the four hours he may sleep ?—Yes.

4199. Either by day or by night ?—Yes ; they get so much sleep that I do not consider they suffer for want of it.

4200. You do not consider, after your experience, that they suffer any hardship ?—Not at all. I never heard it started by the soldier ; they usually go on with their usual duties when they come off guard.

4201. (*Mr. J. R. Martin.*) But night duties, when they have been severe, have been found to affect the health of troops ?—Yes, a constant recurrence of duty on guard will tell very much upon the men's health.

The witness withdrew.

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4202. (*President.*) I believe you have formed an opinion as to the sufficiency or insufficiency of the soldier's ration ?—I have.

4203. What is your opinion as to the quantity ?—I do not think that three-quarters of a pound is sufficient.

4204. Have you seen it in a good many districts ?—I have. I was quartermaster-general in Ireland for five years, and I afterwards commanded the southern division in Ireland, which comprised six counties, and I gave a great deal of attention to the subject, but it must be remembered that the meat in some parts of Ireland was inferior to the meat which the last witness spoke of. I do not think that anybody, looking at three-quarters of a pound of meat, would consider it sufficient after it is boiled, and when you take the bone out of it, it is a mere bit, and as to keeping any part of it over for any other meal it could not be done. In military prisons they give to the first-class prisoners on Sundays 10 ounces of meat, that is, it must weigh 10 ounces after it is boiled without bone, and to produce that 10 ounces it would require about 13 ounces of raw meat.

4205. It would require rather more than that, I think ?—It might require more, but it depends very much upon how the meat is fed.

4206. But they receive that only on Sunday ?—Yes.

4207. And on week days they have none ?—No ; their food generally is Indian meal, or oatmeal.

4208. Is that sufficient to keep a man in health ?—Yes. He is weighed constantly ; the medical officer watches over him, and if he loses weight he is at once put upon superior diet.

4209. Upon the whole they weigh rather lighter, do they not, on coming out than on going in ?—In some cases. There have been instances where they have weighed more, but generally speaking they might weigh a little less ; but I am satisfied that the food is sufficient. You must keep them in condition, so that they might be able to go on escort or any other duty the day after they come out, and they should be fit to undertake that duty.

4210. In the barracks do you think that the cook houses could be improved ?—Certainly.

4211. By giving additional means of cooking ?—Yes, and by improving the grates. The coal that is issued, when it is slack very small riddled, passes entirely through the grate ; there are large divisions, and therefore the whole of the coal is not consumed. If it is good round coal, it is quite a different thing.

4212. Have you seen any of the improved stoves ?—No, I have not.

4213. Do you think that they ought to have the means of baking ?—Yes, and all that was recommended at the time of the cholera, by the medical gentlemen. A circular was issued, showing that that was quite requisite ; but without reference to cholera I consider that they should have ovens to bake in, and so have a change of food.

4214. Was anything done in consequence of that recommendation ?—Nothing ; it fell to the ground. But I have always urged, and Sir Edward Blakeney in his orders to me always urged that they should have ovens in every barrack, and we did everything in our power to have them constructed.

4215. It very frequently happens, does it not, that medical recommendations do fall to the ground ?—They do, they are not always attended to.

4216. (*Mr. A. S. Stafford.*) But you think that they are generally of such a nature as to deserve attention ?—Yes, and I give you a case in point. Speaking of the ovens, the men like it themselves, and their messes are improved by the grease and the fat from the meat falling on the potatoes when baked with the meat.

4217. (*Mr. J. R. Martin.*) Have you always observed that variety in the mode of cooking is desired by the men ?—Not a doubt of it.

4218. (*President.*) What is the amount of hospital accommodation which is laid down for every barrack ?—You will find in the regulations that it is 10 per cent.

4219. Do you think that that is sufficient ?—For contagious diseases I would have other wards. I believe that some medical gentlemen are of opinion, and I agree with it, that you should have a ward for ophthalmia, and a ward for typhus, and a ward for small pox separate, and without reference to the 10 per cent.

4220. Should you have space enough ?—I think so, with the additional wards for the several contagious diseases which I have detailed, and a convalescent ward.

4221. Would it not be an advantage to give each man in the hospital rather more space ?—I think that they are too crowded, and that there should be more space between the beds ; many of the wards are too low. In the hospital at Cork the height of the lower

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wards is 10 and 11 feet, and of the upper wards 9 and 10 feet. I think they are too low, but I may here refer to another subject, namely, the cook-houses; they never should be within the walls of the hospitals, but in the yard. When I was at Cork, I visited the hospital frequently, and I found that if you have the cook-house under a ward you cannot occupy the ward that is above it, and that is very objectionable. I did everything in my power to get it altered. I represented it over and over again, but I did not succeed.

4222. To whom did you make your representation?—To the authorities, and it would of course go to the general commanding in Ireland, and he would forward it. The Commissioners must not suppose that I wish to blame the engineer; he has not the means, he would send the matter forward; he has only means to meet incidental expenses.

4223. (*Mr. A. S. Stafford.*) Is the hospital at Cork a badly constructed hospital?—No; but still it is objectionable on account of the deficient height of the wards and the cook-house being within the walls of the hospital.

4224. (*Mr. J. R. Martin.*) Is there a convalescent ward in the hospital at Cork?—No, there is not, that I have also reported over and over again, and Dr. Maclean, who is at the head of that department, fully concurred with me.

4225. (*Sir James Clark.*) Is the situation a good one?—Yes.

4226. (*President.*) It is not usual, is it, to have the cook houses within the walls of the building?—I know several that have, but I think it is quite wrong.

4227. Have you ever seen any of the naval hospitals?—No, but I have heard them very well spoken of. I understand that they are superior in every sort of way.

4228. Who inspects the meat and so on?—The meat is inspected by a subaltern, but I think that those inspections are very defective. It is just like the case of forage; they are inspected by subalterns, many of them lately come into the service, and inexperienced to deal with so important a question, and I think it should always be the captain of the day, and that they should look more diligently into the matter of inspection, because their powers are very great, and if the captain of the day objects to the meat, a committee is ordered at once, and if it is condemned, the commanding officer may then go to the market and buy fresh, charging it to the contractor.

4229. In the barracks do you think that there is a sufficient number of sheds for the formation of the guards?—No; I think you should have more sheds in a barrack for mounting guard and other duties. If the men are taken out on parade for the purpose of forming them, and it is a wet day, they must get wet to a certain extent. Therefore there should be a shed for the formation of the guards. In most barracks there is nothing of the sort.

4230. Is the hospital furniture sufficient?—I do not think it is. I think that shirts for the men should be provided by the hospital department.

4231. Instead of their taking them out of their own kits?—Yes.

4232. And with regard to other articles, such as crockery, and things of that kind?—I think that they also might be better managed by the barrack-master. With respect to crockery in barracks, if he is called upon to provide crockery he is bound to do it at no expense to the soldier, but if the soldier breaks any article it is a barrack damage, and therefore the soldier in the barrack does not like to take the basins and plates. The remains of the mess are generally given to the person who supplies the potatoes, and she gratuitously provides basins and plates.

4233. Are the privies and accommodations of that description good?—I think they are bad, and that they ought to be improved—they are not what they should be; but it must be remembered that I speak not of this country, but of Ireland. I do not think that the privies are good. When I was at Cork I used to look into them myself, I never failed to inspect all of them when making the periodical inspection of the several corps and stations in the district, and I have recently pointed that matter out. There is another point which I may mention, which is, that the privies are too far from the barracks, and I will give the Commissioners an instance. At Cahir there is one range of buildings in one spot, and another range of buildings in another, there are about 117 yards from one block of barracks to the other, and for any man who may happen to be taken sick there is no privy in the rear of the barrack, but he is obliged to go across the square in all weathers to reach the privies; I do not think that they are well constructed. Then with regard to the sanitary condition of the soldier. A well disciplined seasoned soldier will cost the Government, I think, at the lowest calculation 100*l.*, therefore in the end the Government would gain by looking to sanitary matters. I always insisted in my division on the privies being emptied constantly, and having turf mould and peat charcoal used so as to deodorize them, and the same with the ash-pits. I do not think that those matters are looked to sufficiently. There is an idea entertained by some people, that the medical men are not sufficiently consulted; but I always gave my orders to the effect, that the commanding officer should go round the barracks constantly; and I conceive also that it is the duty of the medical officer to go round and point out to the officer commanding upon the station whatever might require to be noticed, just as the medical officer did every day to me at Cork; he reported to me that everything was sweet, and I went round myself in order to verify those statements.

4234. Is it the case, that with all commanding officers the advice of the medical officer would be well taken?—I can only say, that I should do it for the benefit of the soldier, and I should feel obliged to the medical officer for his advice; and I have always impressed upon the minds of commanding officers that they should attend to those things.

4235. Would it not be well to secure that by making it a matter of regulation that a medical officer should make his report? — If it is in any way defective now, certainly I would do it.

4236. So that it should no longer be optional with the officer commanding to take the medical officer's opinion or not?—Certainly, I think that he should do so, and I conceive it to be the duty of the medical officer to go round and inspect, and report whatever he may see wrong, having reference to the sanitary condition of the soldier. It is his business to notice that to the commanding officer; so that if there is a nuisance, that nuisance may be abated, and if this is not sufficiently clear at present, I would issue some order to make it clear.

4237. (*Mr. J. R. Martin.*) Upon the daily inspection, would you have the officer of the day associated with the surgeon?—It might be so; I can only say that I have rather felt it a pleasure than anything else to go round and see that every part of the barrack was wholesome.

4238. But such an inspection is not a matter of regulation now anywhere? — Then it should be. My orders in my division were perfectly clear; there could be no mistake about it, that they should go round, and every commanding officer would attend to those orders.

4239. (*Sir James Clark.*) The medical officer reports the number of sick each day?—Yes; and at the same time he might report anything relating to sanitary improvements; I had some excellent medical officers with me at Cork, who always came and reported to me what they thought necessary.

4240. (*Mr. A. S. Stafford.*) As a general rule, do you think that the number of the medical officers is sufficient?—I embarked 50,000 men at Cork, and sometimes with so large a mass we found a difficulty about medical officers; but I think that is more a

medical question, and for the medical gentlemen to answer; I have not found that there is any great want generally, but sometimes it has occurred. In time of war you have an increase.

4241. (*President.*) With regard to the question of the ration, do you think it would be an advantage to give to the men a whole ration, consisting not only of bread and meat, but including also vegetables and coffee sufficient for three meals, and make one stoppage over the whole?—I must not go out of my depth on that question. If the question refers to at home as well as abroad, then I do not think that at home the stoppage for bread and meat is bad, and I would let him buy vegetables. The prices of the market vary so; you will find at a place like Tralee that you can get meat for 3½*d.* a pound, and potatoes for 3*d.* or 4*d.* a stone; and then when you go to another place, you would find the price is double, therefore it would be a question.

4242. Would it not be an argument in favour of the suggestion that that arrangement would protect the soldier against the variations of the market?—Yes; the practice is to send a non-commissioned officer out, and there is no doubt that they do get a bonus, they have been frequently punished for it whenever it has come to my knowledge. I have on more than one occasion tried non-commissioned officers and soldiers for things of that sort.

4243. Would it not be an advantage to have as far as possible some system of providing the troops in peace as well as in war?—Certainly.

4244. Do you think, except with regard to the difference of price in the markets, that there would be any disadvantage in giving the soldier for one stoppage enough to keep him perfectly efficient and in health?—I should prefer at home a stoppage for bread and meat, and that he should out of the other money provide himself with vegetables, pepper, and pay for his washing.

4245. You think that where the markets are very low, as in a cheap country, the soldier has the advantage?—Yes.

4246. But in a dear part of England there it would be an advantage to him to have those things supplied to him?—Yes.

4247. Is it not very important that you should take care wherever the soldier is, that he should always have at his disposal enough of food to keep him efficient?—Yes, but I should say, that I would rather have the man go to market himself; when practicable he prefers it. I think he does better for himself. In all large barracks people bring in vegetables from the markets, and they have the privilege of selling them, and there is also the benefit of competition, and one regiment sees what another regiment pays.

4248. But your opinion has been formed principally in the districts where the necessaries of life are very cheap, and where the soldier gets the full benefit of that state of things?—Yes.

4249. But in proportion as he gains by cheapness in one place, he must suffer by the dearness in another?—Yes, he must. I think I shall in a few days be able to lay before the Committee the rates of messing the whole of the Cork division, which was under my command, and then the Commissioners will be able to judge; but I think the soldier would prefer buying the vegetables himself.

4250. (*Mr. J. R. Martin.*) You think that he would rather take his chance of the dear and cheap markets?—Yes.

4251. (*President.*) The soldiers preferred the system of regimental contracts for bread and meat, did they not?—Yes, they did.

4252. And yet the change has worked beneficially?—I think so; but there were many objections made to it. There is only one thing that I have a doubt about, namely, that the commissariat sometimes do not give so good an article in the meat as the men got by the regimental contracts; I remember that the artillery held out to the last, and they never would have anything to do with the commissariat; while the line were receiving from the commissariat the artillery obtained their supplies from their own markets, but that is now broken through.

4253. (*Mr. A. S. Stafford.*) Which system do you think worked the best?—I do not know, but the artillery have been compelled to come into that, but I think the soldier likes to go himself, and he sees the people bringing in the potatoes; I am talking merely of Ireland, there all these things are very cheap. When the bread and meat were bought by regimental contract it was done by the quartermaster under the authority of a board of officers, and the contract was taken precisely the same as it is now.

4254. (*President.*) Suppose such a plan were adopted, would it hold good in your opinion in hospitals?—I think that all contracts in hospitals, where there is no purveyor, are looked to by the senior medical officer; he takes from the contractor the meat.

4255. Are you of opinion that the tenpenny stoppage ought to be maintained in hospitals, or would you lower it to the stoppage of the soldier outside?—It bears hard upon the married soldier, but I think there are many worthless characters who are themselves the persons who cause the disease; I do not think that they should be favoured; they should not have an accumulation of money.

4256. You would have, would you not, malingering if you did not make the stoppage the same amount over and above that which the healthy soldier is exposed to?—Malingering is watched very closely, and when detected is punished very severely; but it does occur sometimes, and sometimes it is hard to prove a case of malingering, but I think if you did anything with hospital stoppages it should be in this way, that the hospital stoppages should be on the same footing as what the soldier pays for his messing outside. Then, again, there are certain things which are required by the sick soldiers; for instance, they may require wine or other comforts, that are expensive to the government.

4257. With reference to a reduction of the tenpenny stoppage, the only reason that has been given is, that it presses hard upon the married soldiers. Do you think that of sufficient importance to induce you to lower the stoppage?—In the annual estimate you will find that the expense of the hospitals is above the mark.

4258. (*Mr. J. R. Martin.*) It exceeds the hospital stoppage?—Yes, it does, and there are certain comforts which are very expensive, such as wines, and therefore the question is, what is to be the expense? he would be at an expense outside to the extent of 8½*d.*, and therefore I think under any circumstances the hospital stoppage should be not less than that charged for his daily requirements.

4259. The hospital stoppage was founded on the expectation that the ration which feeds the man in health should cover his treatment in sickness, except the cost of medicines, and the pay of the medical officers; and you say that it does not do that?—No, it does not. The last annual estimate will show you that at once.

4260. (*Dr. A. Smith.*) Three years ago did it not more than cover the expense?—I do not think so. There is another point that I would refer to. You should discourage the marriage of soldiers in every way, as it causes great embarrassments to all movements of troops; and therefore I say, with respect to an answer that was given by the last witness, as to having buildings outside for married soldiers, it would be an encouragement to marriage, and it would embarrass you beyond anything that it is possible to conceive.

4261. (*President.*) You would not do anything to facilitate the marriage of soldiers?—No.

4262. (*Sir James Clark.*) It was only intended that the house suggested out of the barracks should accommodate the per-centage of married people that is allowed?—I did not understand it so. There is another thing, that the marriage of soldiers must be recognized. You are bound by your regulations to

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register the marriage of every soldier, whether he has been married with or without leave. You must put down the letters W. L. in the register, and it is an extraordinary thing that there have been instances in which property has been recovered for the children of soldiers by reference to the military register, and they had no other means of proving their title. Therefore I have always enforced, in the strictest way, the registration of every soldier's marriage.

4263. (*Dr. A. Smith.*) But, suppose a soldier married without leave, his wife and family would not be entitled to any of the advantages accorded to those who have married with leave ?—No ; but the restrictions are frequently taken off as vacancies occur.

4264. (*President.*) Are the present allowances of coals and candles sufficient in the barracks ?—I do not think they are; and I think that the coals would go further if the matter was properly regulated. The coal yard should be covered in, for nothing deteriorates so much as coal does, from exposure to weather. All the slack that lies about in an uncovered coal yard, receives the wet, and it becomes spongy, and that coal is served out by weight, therefore you get water. If the Commissioners were to examine the barrack-masters, they would find that they are bound to take stock once a year, and it will always be found to the advantage of the Government; that there is a certain quantity of coal over the issue, and that it is caused by what I have stated, of course to the disadvantage of the soldier; and then the grates that they burn it in are of no use; it runs down through the grates and mixes with the ashes, and it is taken away.

4265. You think that the coal would be sufficient if it were good ?—Yes; if it were good round coal, it would go much further; but I would not, without some trial, assert that it is sufficient.

4266. But you will not say that the men are sufficiently warmed ?—No ; I do not think they are. In cold weather they are very cold, and I would give them more coal, and it would, no doubt, add to the health of the men. In inclement weather I have applied for an additional allowance, and in the meantime authorized it; for several days would elapse previous to the receipt of an answer, and then the weather might have become milder. Superior officers in such cases should have discretionary power. I have not hesitated to authorize the issue, after having consulted the medical officer.

4267. And more light in the same way ?—Yes ; they are miserable candles. When I was quarter-master-general I framed a certain code of regulations that no coal should come into any barrack without having been properly tested by a competent board ; and that they should see some of it burnt before it is accepted, and precisely the same with the candles, for they are miserable things. You should introduce gas into the barracks wherever it can be introduced. You should give the soldier more light in his barrack; and with regard to the reading rooms, I think those reading rooms are very comfortable ; they should be made as comfortable as you can, and give them light and fire ; the fire is not sufficient.

4268. (*Mr. A. S. Stafford.*) You are in favour of reading rooms ?—Yes ; I have always found, according to the accommodation in the barracks, that the books were sufficient ; the War Department was always ready, if you made any suggestion as to any other book, to attend to your suggestion.

4269. (*Sir James Clark.*) Therefore, you think that the reading rooms should be made as comfortable as possible ?—Yes, I think so, but I do not agree with the gentleman who preceded me ; for you very frequently see soldiers go into the library and select their books and come out again, and go and read to three or four men in the barrack. I know that from my own observation, there can be no doubt of it. I have taken a great interest in this subject, and I may be excused for saying that I am the person who established the military prison system ; this with libraries, and the evening meal, has reduced crime in our army beyond what any person can imagine. If you visit a military prison you rarely see a case of re-committal.

4270. (*President.*) Which of those three causes would you put the first ?—It is difficult to say ; but I gave the same attention to the other two points as I did to the military prison system ; I worked at that for five years, and I visited several of the gaols in England and Ireland ; I was afterwards examined before Lord Cathcart's committee, and there can be no doubt that the other points are equally good.

4271. (*Mr. J. R. Martin.*) In the instances of military prisoners who came out of prison of equal or superior weight to what they were on entering the prison, what on the average was the duration of the confinement ?—That is a question that can be easily answered, although I cannot answer it at the moment.

4272. It has been found that long confinement is invariably injurious to health ?—You must recollect this, that any suggestion of the medical officer of the prison upon that point is always attended to. I am no advocate myself for long confinement, and in confirming the proceedings of a court-martial, I have invariably said to the medical officer,—"Inform me if you consider that any man is suffering from any cause, and if you think that he should be released, I will remit the remainder of the punishment at once." Then there are visitors to those prisons ; and if they see any man who is suffering, they at once recommend that he should be forgiven.

4273. (*Sir J. Clark.*) With regard to spirits, what do you think is the effect of them among the troops ? —The regulations as to the canteens have been very much improved. I ordered a board to ascertain what the prices in the market were, to confer with the canteen men, and to regulate the prices at each canteen, so as to satisfy myself that no soldier was imposed upon by the prices charged at the canteen, the prices being put on a board in some conspicuous place in the canteen ; but I am no advocate for spirits.

4274. Do you think that if the men could obtain coffee at the canteens, that would be as good ?—I think wherever you can introduce coffee, it is so much the better. A man gets a very good allowance of very fair coffee in the morning, or tea when he comes in, and there is no reason why he should not ask for his cup of coffee as well as for beer. In Ireland they will have their whiskey, and there is every inducement there for a man to drink whiskey ; and one great inducement is this, if a man goes in and asks for a solitary glass of whiskey he pays a penny for it, but if he takes two he only pays $1\frac{1}{2}d$.

4275. (*Mr. J. R. Martin.*) Would you approve of a well-ordered canteen being attached to the library ? —There was a question with respect to smoking sent round to all the army, and the opinions of all were gathered, and I am afraid that where they had the means of smoking so much, it would turn the library into a pot-house, and I should not be for that.

4276. My question referred to a well-ordered canteen, where the men could obtain coffee and be permitted to smoke ?—If you could get coffee at the library well and good, but I should be averse to smoking in the library, they would spit about and make a terrible mess.

4277. (*Mr. A. S. Stafford.*) But there would be much less attraction to the library if they could not smoke ?—I think the attraction to the library is sufficient if you give them a cup of coffee, and I believe the majority of officers are against smoking in the library.

4278. (*Mr. J. R. Martin.*) But that would not apply if the canteen were attached to, or adjoining to the library ?—Where your canteen accommodation is ample in a barrack, without reference to the library, I would not allow smoking in the library ; they might have coffee.

4279. (*President.*) Is there any other point as to which you would wish to offer any suggestion ?—There are two matters, drainage and the construction

of barracks. With regard to the construction of barracks, some people think that the medical officer has not a voice in a matter of that sort; but I should say that every engineer officer and every other officer would seek the opinion of the medical officer as to the site of any public building. In a hospital he is the person to consult; and when I was in Ireland as quartermaster-general under Sir Edward Blakeney, his positive orders to me were, that no building should be constructed at any point without having a board appointed, and that one of that board should be a medical officer.

4280. (*Mr. J. R. Martin.*) But there is no army regulation to that effect ?—I do not know that there is; but I should say, that wherever there is a department such as the quartermaster-general's department, it would not be done without consulting the medical officer, and if any engineer officer under my command was to do anything of that sort without consulting the medical officer, I should consider it my duty to take notice of it, and make a representation to superior authority. But in such cases I should invariably order the district engineer officially to confer with the medical officer, so far as related to the sanitary question.

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4281. (*Sir James Clark.*) Have you known of a hospital or a barrack having been built directly contrary to the advice of the medical officer ?—I know of none. I seek for the opinion of the medical officer on these points, and I think that any officer relieves himself from a certain responsibility when he does so. In all such important matters as the building of a hospital or a barrack, there should be a board of officers, a competent medical officer being one of that board. Then with regard to drainage, I think that surface drains are objectionable, and these are points which medical officers frequently bring under notice, and I give orders accordingly. My idea of the construction of a barrack is this, that the underground plan should be more clearly laid down on paper than the other part.

The witness withdrew.

Adjourned to Monday next, at One o'clock.

Monday, 15th June 1857.

PRESENT:

The Right Honourable Sidney Herbert, M.P.	Sir James Clark, Bart.
Col. Sir H. K. Storks, K.C.B.	J. R. Martin, Esq., F.R.S.
Dr. Andrew Smith.	Dr. John Sutherland.
T. Alexander, Esq., C.B.	

President, The Right Honourable SIDNEY HERBERT, M.P.

Dr. John Sutherland, a member of the Commission, examined.

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4282. (*President.*) Will you state the steps that were taken by yourself and your colleagues to carry out the instructions that were given to you by the Commissioners ?—We first went to Paris, and placed ourselves in communication with the embassy. Lord Cowley unfortunately was about to leave for London, but several medical gentlemen whom I had known for years in Paris were kind enough to afford us facilities in obtaining information. We then proceeded to inspect the following hospitals, which we selected as affording examples of the earlier as well as of the latest and best forms of construction, namely Beaujon, La Riboisière, the Hotel Dieu, La Charité, Saint Louis, Saint Antoine, the unfinished military hospital at Vincennes, and the great military hospital of the Val de Grâce. There is a small military hospital, at Gros Caillou, which we did not visit because we thought it best to see the latest improvements. While making these inspections, we made examinations and inquiries into other matters contained in our instructions; such, for instance, as the dimensions of wards; the cubical space allotted to each patient; the state and means of ventilation; the cleanliness, the state of the latrines, the nursing, &c. The measurements were taken by Dr. Alexander and myself, partly by pacing, partly by direct measurements, he recording the dimensions, which will be laid before the Commission. We further examined or obtained information on matters connected with army medical education, how it was carried on, and the extent of it. The attention of my colleagues was also particularly occupied with the ward arrangements; and we obtained minute information as to the general administration, the state of the bedding, furniture, &c., in the wards. After completing the inspection of the hospitals, we examined two barracks. The newest one, the Caserne Napoleon behind the Hotel de Ville, and a large cavalry barrack, which was specially examined by Dr. Mapleton.

4283. (*Sir H. K. Storks.*) What cavalry barrack was that; was it at the Quai D'Orsay ?—Yes; on these various subjects we obtained information both from personal inspection, and from communications with gentlemen connected with the army, who gave us their opinions. We also collected upon their recommendation a number of books and documents which appeared to us to contain very full information on some points in our instructions. We did not consider it necessary to remain sufficiently long in Paris to digest this information, so as to be prepared with a detailed account of our proceedings. We sent the documents to London, but I believe they have not yet arrived and passed the custom house; and until they come into our possession the information we can give to the Commissioners will only be of a general character.

4284. (*President.*) Do you propose to put in a written report hereafter ?—We propose to put in a digest later of the documentary information which we have received. (*See App. Nos.* LXXVI., LXXVII., LXXVIII.) We can give you our own impressions from the whole inquiry now; but with regard to the more minute details, perhaps it would be better that those should appear separately afterwards as a sort of appendix. Having completed the examination of the Paris hospitals, we proceeded to Brussels and placed ourselves in communication with the Minister at War. We inspected three hospitals there, the military hospital, the hospital of St. Peter, and the hospital of St. John, both of which are civil hospitals; we also examined the most recently constructed barrack, known as Le Petit Chateau, which is said to be the best in Belgium. Having obtained what appeared to be sufficient information in regard to the establishments at Brussels, we closed our inquiry and returned home after being absent from London 14 days.

4285. To go back to the general construction of the hospitals which you inspected, what account do you

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give of them ?—The general construction of all buildings that have been specially erected in Paris for hospital purposes is as follows :—The wards are large, long, and narrow, and tolerably lofty. They have a range of windows along each side, with beds between the windows, generally one window to two beds, or about that proportion, an arrangement which admits of abundant admission of light and of natural ventilation, if the windows be properly used for the purpose. In some of the older hospitals, such as in the older part of the Val de Grâce, there is a bed between every two windows ; but that portion was not originally constructed for a hospital. In the newer wards of Val de Grâce, erected about 1841, the space between each two windows is wide enough to admit of two beds being placed in it, about 24 to 30 inches apart. Each pair of beds is separated from the adjoining ones by rather more than the breadth of the window space. I have known the hospitals in Paris for nearly 30 years, and the improvements which have taken place in that period both in hospital construction and in sanitary arrangements are very remarkable.

4286. (*Sir J. Clark.*) You are speaking now from your own observation ?—Yes ; however much there may be still to do in the way of improvement (and much yet remains to be done), the improvements which have taken place have been very great indeed.

4287. (*President.*) Does that apply to the civil as well as to the military hospitals ?—Yes.

4288. Is the construction of the civil hospitals in Paris better than the construction of similar hospitals in London ?—It would be difficult to answer that question generally, for the construction of the civil hospitals varies very much in this country. We have civil hospitals with windows on both sides, and we have civil hospitals with windows only on one side and with a dead wall opposite.

4289. Could not you in London match any of the civil hospitals in Paris ?—I do not think that we have any hospital in London equal, all things considered, in construction to La Riboisière, excepting the latrines ; but if that comparison were wanted more completely, I could run over the London hospitals again for the purpose of forming an opinion.

4290. Which was the best hospital that you saw in Paris ?—I think the best constructed hospital in use was La Riboisère. The upper wards in St. Louis are very large, lofty, and airy ; and the new hospital at Vincennes will be a very good one as regards construction when it is finished.

4291. (*Mr. J. R. Martin.*) Is that on the model of La Riboisière ?—No ; the difference is that in La Riboisière the wards are built in detached blocks or pavilions placed side by side, and 68 feet apart, each pavilion containing three wards one over the other ; while at Vincennes the pavilions are placed end to end, with intervening staircases. You go up a large staircase and a ward opens on each side on every landing, the end of the ward being towards the landing. In the wards at Vincennes, as in those of La Riboisière, the windows are on opposite sides of each ward, so that there are cross lights right through the ward, and a window for every two beds. One of the pavilions on each side at Vincennes consists of large wards running nearly the whole length of the pavilion ; and the adjoining pavilion is divided into a larger or smaller number of wards by cross partitions with intervening doors, which I consider to be a defective arrangement, as the partitions interfere with ventilation, and the doors admit of direct intermingling of the atmosphere of the wards.

4292. Vincennes you think will be the best ?—I think it will make a very good military hospital, but I am of opinion that it is not a good arrangement to have wards communicating with each other directly by doors without intervening lobbies.

4293. (*President.*) The hospital is in the form of the letter E, is it not ?—Yes, something of that form. I will describe the hospital La Riboisière a little more minutely, as it is the most recently constructed civil hospital in Paris, and exhibits the most recent improvements. The hospital La Riboisière is situated near the northern railway station, in a comparatively open position. The buildings are arranged round a large centre parallelogram 370 feet long by 140 feet wide, tastefully laid out as a garden. The whole hospital is built of hewn polished stone. It consists of eight pavilions or blocks, and a chapel, with other subsidiary buildings. All the pavilions are detached, but the whole establishment is connected by a single corridor 10 feet 4 inches wide and 17 feet high, consisting of arches filled with glass, running round the court, only on the level of the ground floor, and the pavilions are projected outwards from the corridor, and communicate with it only at one end. Two of these pavilions are connected together by intervening arches to form the entrance front to the hospital. They contain the administrative offices, the kitchens, consulting rooms, pharmacie, dwellings, &c., for the officers. Behind these, on either side the court and garden, are three pavilions, each three storeys high, for the reception of sick. Next, there are two pavilions, one on either side, which contain the linen stores, washhouses, &c. Between these two pavilions, opposite the entrance gate, and completing the square, is the chapel, beside which are the baths belonging to the establishment. Behind the chapel is another court surrounded by buildings used as reception houses for the dead, for post-mortem examinations, and for lectures. Beside these buildings are the summer drying grounds connected with the laundry. Each pavilion, as I have stated, is three storeys high, and the end which touches the corridor is wider than the rest of the building, to afford space for a wide roomy staircase which affords the means of communication with the different flats of the pavilion, and also for a small diet kitchen, portable bath, and nurse's room. Each pavilion is separated from the one next it by a distance of about 68 feet, and this space like the court is laid out as a garden. The distance between the wider parts of the adjoining pavilions is 53 feet. Each of the three flats in the pavilion consists of one large ward 111 feet six inches long and 30 feet wide, and at the end furthest from the entrance is a part cut off by a wall and glass doors, and lighted by a large end window which contains the latrines, a foul linen closet, and a small ward for two sick. The wards on the ground floor of each pavilion are 17½ feet high, those on the first floor are 16 feet 8 inches high, and those on the second floor are 16 feet 4 inches high. (*See plan No.* XLI. *of Appendix.*)

Each ward has 16 lofty windows 4 feet 8 inches wide, 8 on each side, extending almost from floor to ceiling, and capable of being opened like the common French window. The walls and ceilings are coated with highly polished cement in imitation of coloured marble, and the floors are of polished oak. The beds, 16 on each side of the ward, are placed two and two between the windows. They are five feet four inches apart from centre to centre, but they are 10 feet eight inches from centre to centre measured across the window. The distance from foot to foot of the beds across the ward is about 16 to 17 feet. The bedsteads and bedposts are of iron, and are provided with white dimity curtains; and each window has curtains of white gauze.

The cubic contents for each bed are, for the ground floor 1,860 cubic feet, for the first floor 1,740 cubic feet, and for the second floor 1,700 cubic feet. Each bed has a good cane-bottomed chair and bed table belonging to it. Everything about the wards appeared perfectly neat and clean.

The great structural defect in these wards is the want of water-closets, in lieu of which are open latrines with tubes descending to the basement of the building. These latrines are cut off from the wards by a ventilated corridor with double doors, and they have, besides, special means of ventilation, but they were offensive, and the smell from them could be traced even into the ward.

The water supply for each pavilion is obtained from a cistern at the top of the building.

The means of ventilation I will refer to by-and-bye.

The bath establishments contain hot and cold baths, 12 in number on each side, and separated by curtains from each other. The common portable bath is used. The bath room is warmed and ventilated, and contains a hot closet for towels. The walls are coated with polished coloured cement. In another room are shower, douche, and hot vapour baths, and there is a tube for applying steam locally. There is a third apartment with hot air and medicated air baths, and a fourth for sulphureous baths.

The linen is washed by steam, and there are good drying closets. The clean linen store, which is in the same pavilion, is beautifully clean and in the most perfect order. It was in charge of one of the sisters.

The kitchen is also very complete, and abundantly supplied with every requisite.

The corridor running round the basement to connect the whole establishment affords the means of exercise to convalescents in bad weather; and above the corridor is an open terrace entering from the first floor of each pavilion, on which patients were walking or reclining at the time of our visit.

The construction of this hospital presents certain very obvious sanitary advantages, amongst which may be enumerated, 1st, dividing the sick, upwards of 600 in number, among six separate and detached buildings, so that there are about a hundred sick only under one roof; 2nd, the isolation of these buildings so that the air can circulate freely between them; 3rd, the large amount of window space for ventilation and light in each ward; 4th, the impervious materials of which the walls, ceilings, and floors are formed; 5th, the abundant supply of baths; 6th, the easy means of communication, and the facilities for moderate exercise for patients.

The great structural sanitary defect, as already mentioned, is the want of proper drainage and water-closets. The pavilions might have been placed advantageously at a greater distance, and it would, in my own opinion, have been better to have had only two flats in each pavilion as is the case in one or two similar hospitals elsewhere.

4294. (*Mr. J. R. Martin.*) Does not La Riboisière purport to be an improvement upon the hospital of St. John at Brussels?—St. John is built upon the same model as La Riboisière, the model is the same only that St. John is not so good, except that it has only two flats of wards, but the distance between the blocks is much too small, and the means of ventilation are totally inadequate.

4295. Therefore La Riboisière is an improvement upon the hospital of St. John in Brussels?—Yes, it is better than the hospital of St. John.

4296. (*Sir J. Clark.*) You say that during the last 30 years the improvement in the hospitals in Paris has been immense; in what respect?—The things that struck me as especially remarkable were the much greater purity of the air in the wards, and the much greater cleanliness, also the greatly improved sanitary construction of the more recent hospitals. With regard to Brussels the military hospital there is an old convent, consisting of a square of buildings, part of which contains two good wards. These wards are large and lofty, but the wards in other parts of the building are very low and by no means well adapted for the purpose. Saint Peter is a rich foundation, and consists of large wards with beds well apart, and plenty of cubic space for the sick. The windows are placed on opposite sides of the ward with the beds between them. St. John, as I have stated, is arranged like La Riboisière, but it is not so good an example of that principle of construction.

4297. With regard to ventilation, what observation did you make?—It is perhaps better in replying to the question not to enter into a discussion as to the merits of different systems, for I hold ventilation to be an art, in the exercise of which we cannot supplant intelligence by machinery; I shall, therefore, simply state the various plans we found in use, and the condition of the air in the wards at the time of our visit. I believe that the unfinished military hospital at Vincennes is the only hospital in Paris in which provision for a specific system of artificial ventilation has been made at the time of its construction. In every other instance, I believe, ventilating machinery has been introduced after the hospital was built; but there is an evident disposition to extend combined systems of artificial ventilating and warming in hospitals and other buildings. The methods of ventilation adopted in the Parisian hospitals are the following:—First, ventilation simply by windows and doors.

4298. (*Mr. J. R. Martin.*) Natural ventilation?—Yes; this plan is used in the Hôtel Dieu, in the great hospital of Saint Louis, in the hospital of the Val de Grâce, and at Beaujon, except in two pavilions. In Saint Antoine there are windows and doors which may be used for ventilation, but at the same time they have small ventilators in the windows.

4299. (*Sir J. Clark.*) What was the state of the ventilation in those hospitals that were ventilated in this way?—It varied very much. In the upper wards at Saint Louis a large cubical space is allowed for the sick, and the wards are very lofty, nearly 24 feet, the windows go up to the very top of the ward, and the upper part of the windows can be opened; the air in those wards, whatever objection might be raised against the number of beds in them, was pure. In the Hotel Dieu, the air was not so pure. In the Val de Grâce the air was pure, on the whole, in the newer wards which have been erected, and in the older wards it was tolerably pure. I have been in hospitals where the air was perhaps purer, and in others, in this country, where the air was by no means so pure; but, on the whole, I cannot say that the ventilation in this military hospital was altogether what it might have been. It was certainly very much better than it was formerly, and very much better than I have observed it in some hospitals in London.

Of ventilation by machinery, there are three kinds in operation, two at La Riboisière and the third at Beaujon. My experience as regards the ventilation of La Riboisière is perhaps a little different from that of my colleagues, for I specially examined it at a time when experiments were going on in cold weather, for the purpose of ascertaining the relative merits of the two systems which are used in ventilating this hospital. At the time to which I allude the windows and doors were all shut, and the ventilation was exclusively carried on by the machinery.

On one side the ventilation was introduced by M. M. Thomas and Laurens, and is accomplished by a fan which draws air down a large lofty chimney from the roof of the hospital, drives the air through a large iron air-trunk, passing under the corridors, from which trunk there are lateral branches passing under the wards, and those lateral branches divide, and are conveyed up in the walls, and there they divide again, so that a branch passes under each ward in succession, and sends the air out at fixed points in the floor. Those fixed points consist of pedestals very much like a French stove in form. There are four of those pedestals in each ward on that side of the hospital where the air is thrown in by the fan. Each pedestal is 4 feet 1 inch high. There is a grating 26 inches long by 8 inches wide on the top of each through which the air passes into the ward. These pedestals contain steam apparatus for warming the injected air in winter. When the doors and windows are shut, the air can only come into the ward through these openings. The impure air escapes as follows:—Between each two beds on the level of the floor is an opening about 8 inches square communicating with a shaft which is carried up in the thickness of the wall to the roof.

4300. Is that a branch of the shaft that you mentioned?—No; that is the outlet shaft. Then, about 8 or 10 feet from the floor in the same shaft there is another opening also, about 8 inches square, and

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those two openings are used in order that the air may escape either above or below the beds. When I examined this hospital in cold weather, the upper openings were closed, and the air entered by the pedestals and escaped by the openings on the level of the floor, passing in that way over the bed of the patient, and in every part of that ward there was the most distinct impression of a gentle moving atmosphere over the face and hands, but no draft. There was no odour whatever until you passed through the glass door into the latrines, and there there was an odour; but none within the wards.

4301. Was the upper opening shut in all the wards?—Yes; at that time.

4302. Did they give any reason for that?—Yes; the reason given was, that the ventilation was intended to prevent the effluvia from the patients intermixing with the air in the wards, and the air from those pedestals made a sort of curve over the beds of the sick and between the beds, and then escaped below. The air was escaping steadily by 16 ventilating openings in each ward, and the power of the current was easily tested by placing a lighted lamp in the escape flue.

4303. (*President.*) Did not that cause too much disturbance of the air?—No; certainly not, at that time the ventilation was just sufficient, and was as nearly perfect as machinery could make it.

4304. (*Sir J. Clark.*) Could you draw out the air through the wall by those tubes?—If you shut the lower openings and opened the upper ones, then the air would be drawn out by the action of the shaft.

4305. Was there any suction power used?—No.

4306. It was merely left to itself?—It was merely a case of repletion. The ward is kept full of air, which is allowed to escape as it can up these shafts, and another means of escape is the pipe of the latrine, which communicates with the external air, and as the whole ward was kept full of air, part forced its way through the doors to the latrine and down the shaft to prevent the effluvia ascending into the wards. On the opposite side of La Riboisière there is another system in operation, that of M. Léon Duvoir, which differs considerably from the one I have been describing to you. It consists of a fire-place burning a small quantity of fuel, in which is a series of hot water pipes. The hot water pipes are led from the fire-place up the chimney, and thence under the roof into a chamber where they form a current by heating the air in the chamber. The object of that is to rarefy a large body of air which is allowed to escape afterwards through a chimney erected on the summit of the pavilion, and the vacuum so produced is supplied by air drawn through shafts from the wards to be ventilated, the intention being to empty the wards of the air by 16 openings between the beds of the same dimensions, and through the same number of shafts, as on the opposite side of the hospital. The air to supply the vacuum is admitted through three circular pedestals, five feet six inches high, placed down the middle of the ward, which pedestals communicate by a cross shaft under the floor with an air brick on each side of the ward, the air coming in under the floor to supply the vacuum produced by rarefaction, ascending through the pedestal where in winter it is heated by hot water pipes, and passing over the beds, and then up the shafts, the moving force being suction, and this plan has been considered almost perfect. I shall state in what condition the air was in the wards when I saw the plan in full operation in cold weather. The ventilation was defective on that side, and there was no movement in the air over the face and hands, similar to what was observed on the other side. There was also odour in the wards. Without referring to the unsettled dispute as to which system of ventilation is the cheapest and most effective, I can nevertheless state that either from the supply of air being too small, or from the means employed to draw it out not being sufficiently powerful for the size of the wards, the air on that side was by no means so pure as on the opposite side of the hospital. This hot water plan of ventilation is advocated both in France and in this country on the ground of its superior economy, and it is certainly much more economical, both in first cost and in current expense; but the only opinion I can give on either plan regards the healthy state of the wards, and the efficiency or inefficiency of the system in use. The other day when we were at La Riboisière the ventilating arrangements were in a different condition from what I have described, on account of the warm season. On the side on which the air is drawn out, that process was not in operation, but I have no hesitation in saying, that with the number of open windows which then existed, and on which the ventilation depended, the state of the air in those wards was very much better than it was when I formerly examined that hospital—that is to say, it was better with the window ventilation when the apparatus was totally disused, than when the apparatus was in use and the windows closed. (*See Appendix No.* XLI.)

4307. When did you see it, when the apparatus was in use?—In 1855.

4308. At what season of the year?—In the end of October. As to the other side, during our recent examination, the fan apparatus was not in full use; it was partly in use, and the windows were partly open; there was as much dependance upon the natural ventilation as upon the machine ventilation I do not think, therefore, that we were in a position to judge of the efficacy of the artificial system. I think we were of opinion that the air was purer on the side where there was no artificial ventilation going on than on the side where the ventilation was partly natural, partly artificial. There is a third system, that of M. Van Heecke, in operation at Beaujon. That hospital consists of an old private residence to which four pavilions have been added for a certain number of sick. There are 20 beds to a ward, and 60 sick to a pavilion. One of those pavilions is venilated in a somewhat peculiar way. It is a system of ventilation that has been in use in this country for factory purposes. In the basement of that pavilion there is a large zinc tube, within which revolves an Archimedean screw driven by a half-horse power engine. This screw drives the air into a furnace and over an iron bell, which heats it in winter, and in that state it is projected into the centre of the lower ward of the pavilion, where it escapes through a pedestal, and then passes along the ward, and out at the four corners of it. Four tubes have been put up, one in each corner, with two openings in each tube at different heights, by which the air is drawn out by a screw above; but in La Riboisière there is an opening between each two beds, while at Beaujon there are openings only at each corner. The inlet air tube having given out a quantity of air to the lowest ward is diminished in size, and carried up through the ceiling to the floor of the ward above, and it there gives out air in the same way, which escapes in a similar manner. The tube is again diminished in size, and is carried to the ward above where it terminates. These are the three systems of artificial ventilation in use in Paris. At Beaujon the windows were open when we were there and the machinery was stopped, so that the pavilion was ventilated by natural means alone. The moving power at Beaujon is much more economical than at La Riboisière, where for 306 beds a force of from 10 to 12 horses out of a 20-horse power engine is required to drive in air, as against a half horse power at Beaujon for 60 beds. Another pavilion at Beaujon is ventilated and warmed by the same vacuum plan in use at La Riboisière. It is stated, as the result of this latter plan, that the air in the wards has been purified, that the odour of wounds has disappeared, and that epidemics of erysipelas, phagedena, and gangrene have ceased, while these diseases still exist in the unventilated pavilions of the same hospital; so far as we could learn hospital epidemics are very rare in the better class of hospitals.

A modification of those artificial systems is being being introduced at the hospital at Vincennes. It is the plan of M. M. Grouvelle & Co., and consists of a shaft about 100 feet high from the basement, carried up to the roof between each two pavilions. The shaft is about 14 feet square. Along the whole arched basement of the two pavilions there is an immense air sewer carried towards this shaft, and this air sewer extends from one end of each block of wards to the shaft. Into this air sewer there are lateral air drains which descend from the wards to the basement. The structural peculiarity in the system is, that from the three floors of wards, air shafts descend to the underground basement before they reach the air sewer, and before that air sewer conveys the air to the large fire at the bottom of the shaft, which is the means of ventilation; the means of drawing the air out. Then, as in La Riboisière, there is an outlet shaft for every two beds and an opening of about 10 inches square placed in the shaft between each two beds, near the level of the floor, while there is another into the same shaft near the ceiling above from 8 or 10 feet from the floor, and those openings are placed so that they may be used as they may be required, either the one above or the one below, to draw off the foul air. Fresh air is introduced as follows: there are double walls carried from the lowest part of the building to the highest at one end of each pavilion, so as to form a large inclosed space or flue, within which the air can pass up; and the air is supplied to this inclosed space upon the level of the ground outside through open basement windows. In order to warm it in winter, there are placed large hot-water vessels at the lower end of each shaft, over which the air has to pass before ascending the flue, and having got to the level of each ward branches are sent off all along the ward, and they give out this air in the centre partly by gratings and partly by pedestals, as in the other artificially ventilated hospitals; and the foul air as already stated is drawn off by the down-cast shafts between the beds to the fire and draft chimney in the basement. The difference between this system of ventilation and the other systems is, the much larger size of the inlets and outlets for air. The usual defects in artificial ventilating arrangements arise from the inlets being too small. The inlets in this case are very large indeed, but still it is doubtful whether even they will be sufficient to supply the 2,220 cubic feet of air per bed per hour required by the contract. That is, I think, as much as I can say upon the artificial ventilation in use. I do not believe that any machinery will ever entirely supplant intelligence, but I think there are instances in which artificial ventilation has arrived at considerable perfection, and there are cases in which it would be of service.

4309. (*President.*) I do not quite understand the distinction that you draw. You say that machinery will never supplant intelligence, but machinery must be carried out by intelligence, must it not?—Yes; my meaning is, suppose you use machinery which acts perfectly when doors or windows are shut, and a door or window is left open accidentally, the machinery would cease to move the air.

4310. You mean that it would never be self-acting?—Yes; and that it would not be safe to trust to it. Just as it would be unsafe to trust to any other complicated machinery without exercising care and intelligence. An intelligent person acquainted with the subject of ventilation, will be able to ventilate any ward either by natural or artificial means; an unintelligent person will not do it well any way.

4311. (*Sir J. Clark.*) To ascertain the effects of those different modes of ventilation you ought to visit the hospitals in winter?—Yes. We ought to carry out the investigations by day and by night also. If the Government for its own special purposes wishes to ascertain which system of ventilation is the best, there ought to be a special inquiry into that subject.

4312. (*President.*) Have you now finished on the subject of construction?—Yes; I have stated what struck me as the most important.

4313. Have you included the description of the Brussels hospitals, or was there anything peculiar in them which you would wish to state?—With regard to ventilation, I will endeavour to describe the system which we found in use in Brussels in two wards of the military hospital there, and I must say that the simple means which were in operation there struck me perhaps more, individually, than any other. The windows were shut, and yet the air was pure. The wards are lofty, and there is a large amount of cubic space allowed for the sick. They have the windows chiefly on one side and at one end. In the lower ward there are four semicircular openings in the ceiling against the wall, one at each corner, about two feet in diameter, and these semicircular openings are carried up to the roof. There are four of them in the lower ward, and in the upper ward are three circular openings, each about two feet in diameter, along the centre of the ceiling, also carried up to the roof. I inquired about the effects of that mode of ventilation, and the intelligent director who accompanied us stated that when the temperature of the air outside very nearly approximated to the temperature of the air inside, the ventilation became defective, but under ordinary circumstances, especially during cold weather, when the air was colder outside than it was within, then the ventilator acted well. It appeared to me, individually, to be a simple and very efficient system, for the air in both wards was remarkably pure.

4314. (*Sir J. Clark.*) Were those openings for the purpose of admitting the air?—Yes. The air seemed to make its way in partly by the doors, and partly by the windows, and partly by the openings.

4315. Where did it get out?—By the shafts to the roof of the building. At Saint Pierre the ventilation was chiefly effected by rather smallish openings, with gratings, above the windows. At the hospital of St. John the ventilation was defective. There are four small tubes, one at each corner of the large wards, for admitting air; they acted most imperfectly, and the outlets were also too small. This hospital exhibited an instance of defective ventilation which might, in my opinion, be very easily improved.

4316. Did you ascertain how those ventilating tubes in the military hospital terminated?—They terminated in the open air; they were covered.

4317. Did they never find the air, when the ward was very hot, come down those tubes?—It did not appear so. It was a wet day when we were there, and there was a difference in temperature between the air inside and outside. I think the ventilation was, considering everything, an extremely simple contrivance, and very effective; and afterwards I was informed that it was considered to be effective by the parties themselves.

4318. (*President.*) With regard to Vincennes, where there are large canals for the foul air, there is a shaft, as I understand you, running up to the top, there is a furnace at the bottom, and that shaft communicating with those large canals; will not the cold air come down when you heat it?—It is the law of tubes that if hot air goes up a centre tube the cold air has a tendency to flow down the sides. But take the case of the winter ventilation; you have two sets of tubes going up towards the top of the building, one is an inlet of air to the wards, and the other is an outlet by descending tubes to the ventilating shaft. In winter you have a fire under the shaft, and you have what corresponds to a fire in the up shaft, namely, a number of hot water vessels, and you have two columns of air communicating with the wards, each heated; and the amount of draught can only be represented by the difference between the temperature of the two columns, and the difference of length in the shafts; and if by any chance the fire should be allowed to go too low, so that the temperature in the inlet shaft was higher

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than that of the outlet chimney, the current would go back in place of forwards.

4319. With regard to the water supply, how are the hospitals in Paris supplied?—The water supply in those hospitals is derived from the city supply. The supply of water in Paris may be said to be unlimited.

4320. (*Sir H. K. Storks.*) Is the water supply laid on?—Yes; but not in the sense in which we say in this country that water is laid on, that is, to each individual house or flat. The supply in Paris has only been recently improved. When I inquired into the subject in 1850, I found that one of the chief engineers had only one water tap laid on to his own house, and that was in the basement floor.

4321. (*President.*) When you say that the supply of water in the hospitals is unlimited, you mean as to quantity; but is that laid on to the different floors?—No, it is carried up in buckets, or pumped up; it is not laid on at pressure, as we have it in this country.

4322. It is not turned on in the same way?—No.

4323. (*Sir H. K. Storks.*) Have they tanks in any part of the hospitals?—They have tanks in some of the hospitals. At La Riboisière they have a steam engine and a pumping apparatus, and they have a small iron tank in each pavilion communicating with the flats below. We chiefly examined the basement flats, and there the water is laid on in taps; but I do not think it is generally done above, and the reason is that the basement flats are on the level of the water supply.

4324. (*Sir J. Clark.*) Are not the tanks meant for supplying the other wards?—Yes; the water is pumped up or carried up. I think at the Hotel Dieu the water is carried up, but I am not quite certain about it, or whether it is pumped up. With regard to the quality of the water, it is tolerably good; it is equal to our London water in quality, and there are means of filtration in use to purify it. If the means of distribution were adequate, the supply would be larger than we have.

4325. (*President.*) Does the same observation apply to Brussels?—They have also an unlimited supply, but I do not know how it is obtained.

4326. What is your opinion as to the state of the hospitals that you have visited with regard to cleanliness, compared with the English hospitals?—Many of our English hospitals are as clean as hands can make them, and in the same way, at Paris, you can find hospitals which are very clean. But I think in certain hospitals the staircases were not so clean as they might be. I would refer especially to the hospital of La Riboisière as a model of cleanliness. There are oak floors, as is usually the case in the Paris hospitals and dwellings; and these oak floors are waxed and are kept very clean and brightly polished. Speaking generally the wards themselves are very clean, and at La Riboisière they have adopted that which I consider to be one of the greatest improvements in hospital construction, namely, the use of impervious polished walls in place of porous plaster walls. This highly-polished surface answers the same sanitary purpose as those glazed brick walls which were introduced into Prince Albert's model cottage, erected at the Great Exhibition of 1851. It seems to be of Parian cement made in imitation of marble. In La Riboisière the ceiling of each ward is also formed of this polished cement.

4327. Will walls so covered bear washing?—Yes, that is one of the great advantages, that they can be washed most readily, and they do not absorb anything; they are almost entirely non-absorbing,

4328. Is that as good as the lime-washing of a plaster wall?—Lime-washing is most useful with porous plaster walls, when there is a reason for it, but the necessity would never happen with Parian cement. We had the evidence the other day of one of the officers of the London hospital, in which these Parian cement walls are in use, and they are considered there extremely valuable.

4329. Is it expensive?—I think it is.

4330. How was it at Brussels?—There the walls were plastered and lime-washed.

4331. Were the hospitals there equally clean?—I think they might be cleaner. They were not so clean as La Riboisière. The floors are of oak wood, but not polished.

4332. What is the system with regard to the latrines and drainage?—The latrines in almost every instance were most defective, and such as, I am glad to say, we have not in any hospitals in Great Britain, that I know of.

4333. Have they any water closets?—They have one or two water closets, in certain new wards, in Saint Louis, but they have been so defectively constructed that they will become a positive nuisance when much used. In Paris they have a system of street drainage, upon a very large scale. They have immense subterranean drains for the removal of surface water, but those drains, large as they are, remove none of the house soil. They do not permit the soil from any house or a hospital to pass into the sewer. The usual way of disposing of it is, to receive it into moveable barrels, or to construct under each house or hospital one or two cemented cesspools, completely closed in, except apertures for the admission of tubes from the latrines or water closets, an aperture to allow the surplus water to escape, and another aperture to allow the cesspool to be emptied, by a special machine which they have for that purpose; and the result is, that whenever you have open latrines and not water closets, which is the practice over the greater part of Paris, and in all the hospitals, you have an open tube communicating between the barrel or cesspool and the latrine. In the French model prisons they have endeavoured to get over these defects, and to prevent the escape of the emanations, by an ingenious but not quite an efficient process.

The matter from the latrine falls into a receptacle below, and the air from the cell is extracted down the opening of the latrine by means of a ventilating shaft, or it is forced down by a machine, as is the case at La Riboisière. But the objection to the plan is this, that the diffusive power of the noxious gases is very much greater than the velocity of the air current, and the result is, that however perfect the downward current may be, the smell of sulphuretted hydrogen and ammonia is sometimes very strong indeed.

Without making any sort of criticism upon the state of these places, it appears to me that the simple facts are enough to show what their sanitary effects on the inmates must be. At Brussels they have very much the same arrangement in the military hospital. It was not so clean as it might have been, and in the other two hospitals they have remedied the defects in some degree by very free ventilation of the latrine; still, under all the circumstances, those hospital arrangements are by no means so advanced as they ought to be, considering the great advancement in other sanitary arrangements which has been made. I need hardly state that the best-constructed water closets, along with very efficient ventilation, are alone admissible in hospitals.

4334. With regard to the cubical space, did you take any measurements?—Yes, in all the hospitals and barracks. There are regulations with regard to the cubic space, in hospitals and barracks belonging to the French army. In infantry barracks, the regulated cubic space is 444 cubic feet per man; in cavalry, it is 518 cubic feet. In wards in military hospitals, for wounded and fever cases, the cubic space per bed is 740 cubic feet. For venereal cases, it is 666 cubic feet per bed. There is also a regulation as to the cubic space, issued by the administration for civil hospitals; but, in every instance, we found that the actual amount of cubic space, in use, was very much greater than was required by the regulation. The mean cubic space, in the civil hospitals in Paris, is about 1,300 cubic feet per bed. At La Riboisière, it is about 1,800 cubic feet per bed. In the military

hospitals, the cubic space varied from upwards of 1,050 to as much as between 1,800 and 1,900 cubic feet.

4335. So that, in practice, they allowed much more space than the minimum quantity required by the regulations?—Yes.

4336. (*Sir J. Clark.*) Because they find it necessary, I suppose?—Yes; and I should state that this applies not to the number of sick, but to the number of beds; and even in those wards where there were no beds vacant, we found the amount of cubic space for the beds to vary from upwards of 1,000 cubic feet to very nearly 1,900 cubic feet. And I believe that this statement is under the mark. We had to measure some of the large wards by pacing, and we arrived at very nearly the same conclusion as to dimensions; but the cubic space now given is considerably less than the dimensions would give. Therefore, it is safe to say that the maximum is about 1,900 cubic feet.

4337. Do you apply that maximum to a bed, or to a patient?—To a bed.

4338. What was the size of the beds?—About 3 feet; and there were 32 beds in each ward at La Riboisière.

4339. How long was the bed?—About $6\frac{1}{2}$ feet.

4340. (*Mr. J. R. Martin.*) Should you say that the average number of cubic feet, in these hospitals, would amount to about 1,500 feet?—Your question refers to a number of hospitals, in different parts of Paris, under very varying circumstances; but I think the true answer is, that it varies from one to the other, between the points I have mentioned, say 1,050 to 1,900 feet. The average of the three hospitals at Brussels is 1,500 cubic feet for each bed. In the French military hospitals they seem to have what might be called a reserve of beds. They have, in the Val de Grâce, two flats of beds in use, and they have the top flat under the sloping roof, which is not in use, but which can be brought into use; and they are making the same provision at Vincennes. In the largest pavilions they have three flats of beds to be used, and one flat of beds above to be held in reserve. And the operation of this, at Val de Grâce, is that while they have accommodation for between 1,400 and 1,500 sick, their actual number now is only about 1,000; not a single bed under the sloping roof is in use, for there is nothing there but the bedsteads; and it seems to be a part of their system to keep a reserve.

4341. (*President.*) What is the usual size of the wards?—The wards vary in size. La Riboisière has wards for 32 beds; Beaujon for 20 in each ward; Saint Antoine for 22; Vincennes for 40; Val de Grâce for 50 and 52.

4342. (*Sir J. Clark.*) Are there no small wards?—Yes; there are some small wards. There are wards at La Riboisière for two beds. That may be taken as one extreme. The other extreme is the large imperfectly-ventilated ward at La Charité, which holds 120 sick, and at Saint Louis there is a ward which holds 84 sick. At Vincennes there are wards for 40.

4343. (*Dr. A. Smith.*) Are there any serious cases treated in those large wards?—Yes.

4344. Do not they complain of the noise made by the great number of patients walking about?—I cannot say that there were many patients walking about, all the wards were very quiet and silent.

4345. (*President.*) Is the cubic space allowed greater or less at Brussels than at Paris?—The average is 1,500 feet for each bed. That includes three hospitals. Rather more than the Paris average.

4346. Is the distance between the beds greater at Brussels?—No; the distance between the beds is 2 feet 8 inches; 6 feet 8 inches from centre to centre, and 12 feet between the ends of the beds.

4347. Do they use curtains to the beds?—In many of the French hospitals they have iron pillars to the bedsteads and white chintz curtains. At La Riboisière they have white gauze curtains to each window, and it is the general habit in French hospitals to use curtains; but they have none in the military hospitals.

4348. You have mentioned already the composition of the walls?—Yes.

4349. And of the floors?—They are of waxed and polished oak uniformly; and in a hospital heated by artificial means there is an iron plate that runs along the whole length of the ward, and underneath that are placed the air tubes and warming tubes. A larger or smaller number of stoves placed down the centre of the ward is the usual method of warming where there is no separate system of heating and ventilating.

4350. What are the staircases made of?—They are sometimes of stone and sometimes of wood.

4351. What should you say was the general sanitary condition of those hospitals?—I consider the sanitary state of the hospitals to be excellent as regards construction, lighting, means of natural ventilation and cleanliness; but as to the latrines and the water supply, I think there is room for great improvement.

4352. (*Sir J. Clark.*) You would say generally that the sanitary state of the hospitals is good?—Yes, using the word "good" in a relative rather than in an absolute sense. In some particulars it would be very difficult to surpass certain Paris hospitals in sanitary construction, but in matters connected with the habits of the people, such as the latrines, they are defective, although either by the position or by the ventilation of the latrines their defective sanitary construction has to some extent been compensated.

4353. (*President.*) Did you make inquiries into the nature of the medical education for the army?—Yes, we made very minute private inquiries and obtained information from the best sources. What we have to lay before the Commission is partly of a documentary character, but I may state that at Val de Grâce there is a special military medical school. That school contains a museum of natural history and of anatomical preparations. There is also attached to it a botanic garden, a good library and reading room, and it has four lecture rooms. And there are seven professors and seven agrégés appointed for the practical instruction of the pupils; distinguishing practical instruction from purely scientific instruction. I should say that the education given is a practical education. This is the last published affiche of the school, and shows the course of instruction (*handing in the same. See Appendix No.* V.) Every man who enters into the army medical service must have the French degree of doctor of medicine. Having obtained this, he is admitted to the military medical school after an examination. There he has to pass an average time, say, of about 12 months, and that contains two four-month courses of instruction. The points which are brought under his notice are also mentioned in the affiche. He has to submit to four examinations by the professors during that period, and lastly to one final examination by a board of examiners, not connected with the school, before he is admitted to serve. I shall speak generally of what we learned as to the nature of the instruction, and shall lay before you a digest of the kind of information that is given, and the kind of training that is required. If the practical results of that training at all come up to the programme, the men who enter into the French army medical department must be very superior men indeed. The following are the objects of instruction:—First, a course of clinical medicine, which lasts the whole year; then a course of clinical surgery, which lasts the whole year.

4354. (*Sir J. Clark.*) Both in the same year?—Yes. Then there is a course on venereal diseases which lasts the winter, and a course on cutaneous diseases, which lasts the spring. There is a four months' course of lectures and instructions from the 15th of January to the 15th of May, and in this course are comprehended anatomy and practical chemistry, as applied to special subjects which come under the observation of military medical officers. I inquired whether the medical officers ever had to perform chemical analyses, and I was told very frequently indeed. There are lectures upon army epidemics, and on

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the subject of diagnosis with its practice, and also on the application of bandages and surgical apparatus.

4355. (*Mr. J. R. Martin.*) The whole of this instruction which you describe is something over and above and super-added to the education necessary for qualifying a man to practise in civil life?—Yes; a man must pass out of the civil school fully competent for civil practice before this takes place. In the second four months, from the 20th of May, to the 20th of September following, the course is practical chemistry of the same kind, and then military hygiene and military medical jurisprudence—then operative medicine, which includes the practical parts of medicine, and then the application of bandages and apparatus. There are professors who give lectures and instructions upon all these points. There is no collection of models of hospitals, barracks, ambulances, &c. at Val de Grâce, but there are models in almost all the hospitals and public institutions where the students are taken to become acquainted with them, and to compare their construction. A professor takes his pupil to teach him perhaps at a distance from the hospital or in some other establishment,—as, for instance, he is shown the merits of different systems of ventilation, or the methods for purifying water. He is taught wine tasting, and he can only acquire that art at one public institution in Paris, and he is taken there, and taught it.

The following is a digest of the programme :—

The instruction in *clinical medicine* comprehends examination of the patient, diagnosis, indications, treatment, a detail of cases, ascertaining the extent and nature of organic changes, résumé of the actual state of the patient, etiology, comparative diagnosis, the discussion of all these subjects *vivâ voce*, the use of the diet table, the art of prescription under the professor; lastly, post-mortem examinations, and pathology.

Instruction in *clinical surgery* comprehends the more usual surgical injuries, and diseases incident to soldiers, with the diagnosis, prognosis, and terminations, the etiology and treatment. This instruction is also given under the professor, who discusses in the operating room the nature of the disease, the form of operation, the possible accidents, and necessary precautions, as well as the subsequent treatment. In the course of eight months of the year there are 30 practical lessons, specially given on wounds and injuries incident to war.

Particular stress is laid on the teaching of *regional anatomy*, as being of all methods the most interesting and practically useful for the military surgeon.

Three practical lessons are given on the anatomy of the cranium, 12 on the face, 6 on the neck, 6 on the chest, 5 on the abdomen, 4 on the pelvis, 8 on the inferior members, and 8 on the superior members.

The course of *chemistry applied to hygiene and to army purposes*, comprehends the analysis of the qualities of food and medicine, and the recognition of poisonous substances; the discovery of adulteration; the chemical history of atmospheric air, water, starch, farinaceous substances, bread, wine, &c., their natural condition, preparation, composition, physical and chemical properties, distinctive characters, alterations they may undergo, frauds, and the uses of various substances, particularly as regards hygiene.

The pharmaceutical pupils are required to work every day, and the medical pupil two days a week in the laboratory, under the constant direction of the professor or the agrégé, in order that the one may become acquainted with the most delicate chemical operations, and the other with the most important applications of chemistry to garrison and field purposes.

The course comprehends 60 practical lessons, including re-agents, metalloids, waters from all sources, with their distinctive characters, and the means of purifying them spontaneously, by filtration or disinfection; mineral waters, filtering apparatus, distillation; methods of freezing, and of chemical purification; the nature and properties of atmospheric air and of noxious gases, with their analysis; the physical construction of the atmosphere, its alteration by emanations from bodies in combustion, living animals, marshes, lakes, organic matter, &c. Charcoal, with its uses for purification, filtration, heating, &c.; the analysis and recognition of various gases; iodine, phosphorus, arsenic, poisons, their action on the human organism, and the means of detecting them; acids, oxydes, and mineral salts, their recognition, analysis, action on the animal economy, treatment, the recognition of a given poisonous substance, organic acids, organic alkalies; inquiries into these for similar purposes: to discover a given organic alkali; the composition chemical and microscopic of blood; the characters and composition of milk, cream, cheese, butter, with the various substances used for their falsification; the physical and chemical properties of urine, with the chemical and microscopic changes it undergoes in disease or from poisons; urinary calculi and the character and composition of bile.

Operative surgery is taught in 53 practical lessons, which comprehend all or nearly all surgical operations, and there are besides 12 practical lessons given in bandages, surgical apparatus, and the reduction and retention of luxations.

The course of instruction on *military hygiene and medical jurisprudence* is given in 51 practical lessons, and 15 practical exercises. It comprehends the special causes of disease and mortality in the army; aptitude for service; recruiting, regulations, exemptions; simulated and concealed diseases, with the methods of discovering them; voluntary mutilations; circumstances attending the formation of contingents; the departure and arrival of recruits; inspections, registers; moral and physical influences acting on the recruit; home sickness; functions of the skin as affected by age, sickness, climates, &c.; clothing, clothing materials, their properties, hygrometric, calorific, electric; emanations proceeding from them; chemical and microscopic verification of the purity of the materials; the influence of military clothing and equipments on health; the hygiene of military clothing, with relation to seasons, climates, day, night, epidemics, &c.; preparation, qualities, and verification of leather for shoes; effect of diet on the system; the nourishing power of different substances; flesh of animals; diseases of these animals, with their effect on health; the means of recognizing disease in animals destined to supply a camp; characters of good meat for camp and hospital purposes; vegetable aliments, chemical composition, qualities; methods of baking; qualities of bread and biscuit; the preparation and preservation of alimentary substances for troops in the field; effects of the use of salted and smoked flesh; the ration, and the circumstances which require it to be varied; drinks, water, its characters according to origin, composition, temperature, &c.; means of ascertaining the qualities of water while on march; means of preserving drinking water; influence of certain water in the production of disease, and the means of purifying water on march; spirituous liquors and their abuse; fraudulent adulterations; surveillance of regimental canteens by medical officers; the hygienic use of spirituous liquors, and exercises in tasting them; milk, its uses and the appreciation of its qualities by taste; condiments; sanitary condition as relates to bivouacs, tents, huts, barracks, camps, ambulances; rules to follow in the choice of proper positions for camps; the salubrity of camps, its importance, means of securing it; usual causes of the insalubrity of camps; rules to follow in the position and construction of hospitals, barracks, guard-rooms, casemates, &c. Causes of impurity of the air in different permanent military buildings, with the means of remedying them; cubic space allowed to soldiers in barracks and hospitals; ventilation and its modes; parallel between existing systems of ventilation, fumigation, the effect of stagnant waters, canals, rivers, lakes, forests, cemeteries, the sea, &c.; sanitary precautions to be taken by troops while draining marshes, or constructing works in marshy localities; sanitary

precautions for latrines; special rules in the formation of a regimental infirmary or hospital in the field; on exercise, its general and local effects; military gymnastics and their influence on the superiority of French troops to those of other European nations; the professional exercises of the soldier, riding, marching, arms, &c.; hygienic rules, governing muscular action; cleanliness, its effect on the health of the soldier; baths and ablutions, their sanitary use; the doctrine of climates, their physiological and pathological influence on the human organism; acclimatization; precautions to be taken when troops are changing climate; morbific effects of change of climate, and the sanitary use of climatic influence; the soil, its structure and configuration; principles of medical topography and statistics, etiology, and prophylaxy of epidemic diseases, quarantine, poisoning, real and feigned, succour and antidotes; detection of poisons; tobacco, its preparation and qualities, its use and abuse in the army; morbid states, simulating death, succour to be given in asphyxia with the means and instruments for recovering the patient; signs of apparent and real death, with the precautions to be taken as to them in hospitals, battle-fields, and military executions; different means of sepulture, and the best methods during war and epidemics; signs of suicide and homicide; character of burns and wounds made during life and after death; various forms of certificates; injuries and infirmities which authorize retirement; various forms of reports and registers; the rights and responsibilities of military medical officers.

Practical exercises in military hygiene comprehend the choice of men for service; visit to the hospital of Bicêtre to study the different forms of mental alienation; inspection of a tannery; inspection of a caserne as to the accommodation for soldiers and horses, kitchens, ambulances, &c.; visit to the hospital La Riboisière to compare the two systems of warming and ventilation; inspection of the prison Mazas; inspection of the preparation of flour, bread, and biscuit; of a baking establishment, and one for preserving vegetables; visit to a brewery; visit to the establishment on the Quai de Celestins to see the clarification and purification of water and the process of filtration at the Caserne Napoleon; the tasting of alimentary substances in use at Val de Grâce; visit to the school of military gymnastics; inspection of the manufactory of tobacco; visit to the veterinary school at Alfort; exercises in tasting wine, beer, eau de vie, absinthe; medico-legal autopsies.

There is another very important series of instructions in *military hygiene*, namely, *on the diseases and epidemics of armies* chiefly arranged according to their hygienic classification. There are 49 practical lessons given on this subject. They comprehend the diseases of seasons; the diseases of climates; the diseases peculiar to telluric conditions,—such as the nature of the soil, defective natural drainage, bad irrigation, the culture of virgin soils, marsh diseases, hereditary diseases, diseases depending upon the quality and quantity of food, the study of epidemic and endemic attacks, the effects of the military profession and camp life in predisposing to these diseases, and practical illustrations drawn from particular epidemics.

The course on *diagnosis* and *pathological anatomy* is comprehended in 35 lessons, and special attention is given to the pathology of army diseases.

There are 63 lessons given on *military pharmacy* and "*comptabilité.*" These comprehend the pharmaceutical materials required in garrison and in the field; regulations as to poisonous medicines; the providing of medicines; collection of plants for medical purposes in distant places, and their preparation; hospital formularies; extemporaneous preparations; officinal preparations, materia medica, animal and vegetable; the study of the various classes of medicinal plants; and the method of keeping the accounts of materials and quantities with the necessary reports.

4356. (*Dr. A. Smith.*) Did you obtain any opinions in reference to the advantage of that practice from any others but those who were concerned in giving the lectures?—From no other persons.

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4357. Not from any of the inspector-generals, or members of the council of health?—No; the council of health consists of seven inspectors, and the school is under one of them.

4358. You did not take their opinion as to the effect of that practice?—I did not, for obvious reasons, but it was easy to learn from conversation that the system was considered excellent.

4359. (*President.*) The distinction, I think, is, that the French Government undertake to educate the medical officer, whereas we trust to the open market for it?—Yes; the French Government undertakes the special education of the military medical officer, not his education for a degree, except under special circumstances. For instance, I think I am right in saying that if there are medical students who have displayed peculiar aptitude for their work, the Government sometimes passes them into the school of medicine, and furnishes them with the necessary inscriptions to obtain their degree, and afterwards they can enter the Imperial Military Medical School if found fit, and the Government pays the whole expense of this school.

4360. How do they secure that, when this good education has been given to the students, they will not leave the army service?—Practically they do not leave. They prefer remaining in the army, and I understand that, practically, men who enter, like the army. In the case of medical students specially educated, they come under an obligation to serve 10 years.

4361. (*Sir H. K. Storks.*) There is no want of medical candidates for the army, is there?—It appears not.

4362. (*President.*) Is there any other point that you wish to allude to?—I should wish to be asked about barracks.

4363. Did you examine into the barracks in Paris?—Yes; I examined with my colleagues the Caserne Napoleon, which is the latest constructed, and considered the best.

4364. Is it a well constructed barrack?—Yes; the Caserne Napoleon consists of a large square of building, the barrack rooms in which go from one side to the other, straight through. They have windows opening, consequently, into the street outside and into the court inside. The barrack-rooms are of two dimensions, one is half the size of the other, and in the smaller room the ranges of beds extend each way from back to front of the building, that is, across it. In the double room there are four rows of beds, two along a bulk-head which divides the large room into two parts.

4365. (*Sir J. Clark.*) Does the division go to the top?—No; it is a partial division of the ward, it is a rail. Then the beds are very close together, from 8 to 12 inches from side to side. The bedsteads are of iron, and the rooms are ventilated by small openings near the ceiling; I think four upon each side, which communicate with a shaft, and so go to the top of the building. They are small circular openings much too small, but when we were there all the windows were open, the rooms were nearly empty, and the ventilation was good. The cubic space allowed is much larger than the regulation (444 cubic feet). It is about 800 cubic feet a man, but the cubic space is chiefly above the bed, on account of the beds being so close together. Epidemic diseases are received at Val de Grâce from the barracks of Paris, showing that these diseases appear in barracks.

4366. (*Sir H. K. Storks.*) Are there shelves and pegs for the men to hang their things on?—Yes. This barrack has the usual army latrine in the basement, merely a few openings. The one we saw was very offensive. The water supply is on the basement.

4367. What means of ablution have the men?—There are stone troughs at the foot of the great staircases, which on each side of the square afford the means of communication with the barrack rooms, and

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over each trough are a greater or smaller number of water taps. The water is specially filtered and is constantly on. It is Seine water. The men wash and draw water at these taps. We saw them washing clothes in a trough in a corner of the court.

4368. What kind of kitchens have they?—The kitchen is a rough military kitchen, not at all up to the hospital kitchens. I may state generally their construction. The hospital kitchen is generally a large, lofty, well-lighted, square apartment, in one or two instances having walls and ceiling of polished parian cement. There is a square cooking apparatus in the centre of the floor, constructed most frequently of iron, with polished brass or copper mountings, but sometimes of brick. This apparatus contains large boilers, and has compartments for baking or roasting, and the whole is so constructed as to save fuel. The kitchen arrangements in the hospitals generally are extremely good, clean, and quite sufficient. They are not so complete, or by any means so clean and good, in the barracks.

4369. (*Sir J. Clark.*) How many kitchens have they in La Riboisière?—One; placed in one corner.

4370. Have they any small kitchens for preparing comforts attached to the wards?—On each flat, at La Riboisière, there is a small kitchen in which they can cook any small thing; practically things are cooked in the large kitchen, and the diets are all carried; they have no lifts.

4371. (*Dr. A. Smith.*) Must not the men be very apt to catch cold if the washing places are at the bottom of the staircases?—It would be an improvement to have the lavatories elsewhere. I do not consider them by any means perfect.

4372. Does not that cause a great accumulation of filth and dirty water?—It may; but when we inspected these lavatory arrangements, the troughs were clean.

4373. (*Sir J. Clark.*) How many men does the Caserne Napoleon hold?—It is intended for 3,000.

4374. (*Sir H. K. Storks.*) Have they any covered parade grounds?—I do not recollect having seen any. There is a corridor round the whole court at the Caserne Napoleon; but the men were being paraded in the open court. There is a covered gymnastic court at the Petit Chateau at Brussels.

The witness withdrew.

Dr. Henry Mapleton.

Dr. Henry Mapleton, 15th Hussars, examined.

4375. (*President.*) You have heard the evidence of Dr. Sutherland, and the description he has given; do you agree with him generally, or is there anything you wish to add?—I agree in the abstract with the description of what Dr. Sutherland saw; but, as the Commission may come to a conclusion as to the best mode of constructing and ventilating hospitals from that description, I think I had better offer a few remarks on the size of the wards and position of the windows in the French hospitals. We found wards capable of holding 30, 40, 50, even 100 patients, with opposite windows, and the beds placed between them; and many persons in England suppose that the large size of the wards, and the situation of the windows, are for what is called a cross ventilation, so that by this arrangement foul air will pass out at an opposite window without diffusion. The ventilation in some of the French hospitals is carried on by artificial means; there are no open fire-places, and the cross windows in these hospitals are not for ventilation, but as far as I could make out were chiefly for light; and even that was so strong that it had to be subdued in the civil hospitals by curtains. In the large hospitals, where an artificial system of pumping in, or extracting out was in operation, positive orders were given that none of the windows should be open day or night. In those hospitals where there was no pumping in or extracting, but where the air was heated by a stove in the room, no cross ventilation could take place; for if a window or door was opened to supply air, that air, being cold, would rush to the part where the vacuum was formed by the stove, and not pass in a straight line through the ward to the opposite window. I was informed by military and medical authorities, that the rooms were of such large dimensions for facility of administration, and for economy. I asked those gentlemen if they thought that small wards would be better for the comfort, &c., of the patients than the large ones; and they said, if it could be carried out, 10 or 12 men would be a better number than 40. I asked the soldiers themselves, and they said the same. I visited the wards at La Riboisière at night, between 10 and 11; and I found in two of them patients very ill, moaning, and disturbing the rest. Therefore, I conclude from what I observed myself, and from what I heard from others, that the block construction was preferred, because it admitted of facility of administration in having large wards; that the opposite windows were not intended so much for ventilation as for light, and that the heating of the air by stoves, &c., suited the habits of the people, and the finances of the country. I was told by high authority that the most approved system of ventilation and mode of construction as regards wards, &c. &c., was to be seen in the new military hospital, nearly finished, at Vincennes, in which the ventilation is to be carried on by artificial means; and the wards are large with cross windows, and the space between the wings is 300 feet. The construction is for economy.

4376. (*Sir H. K. Storks.*) And for facility of administration?—Yes.

4377. (*President.*) Though the light might be too great when you saw the hospital, it would not be so great in winter?—A Frenchman is accustomed to much light. An Englishman would, I think, complain of the same amount. Many of the patients told me that the light of the opposite window annoyed them, and the French officers said the same; they said there was too much light for some patients.

4378. In the construction of almost any hospital, must not somebody be opposite to the light?—No, that is a great principle that is being considered at this moment. The objection to Netley by various physicians and medical men is, that there are no opposite windows between each bed, that is to say that the windows are placed at the end of the rooms instead of at the sides, by which latter construction the air would pass from the windward window right through the leeward one, taking each man's foul air from him in that manner; and that is one reason why it has been said that the French construction of the wards is so much superior to ours.

4379. (*President.*) But do the English physicians who advocate that principle advocate it for sanitary purposes?—Yes. They say that the French have found by experience that this cross ventilation is superior to anything else.

4380. Have they not found that in the civil hospitals in London?—I do not know of any hospitals in London where the experiments have been made to the same extent. They have in Paris with this mode of construction artificial ventilation by pumping in air and extracting it. In England we have an extracting shaft, which is an open fire-place, and which will derange all such artificial systems. Therefore we shall certainly fail, not only in getting pure air into the wards, but in drawing foul air out of them, if we are to depend for our ventilation on any such artificial means as are in use on the continent.

4381. Does that remark apply to any large system of artificial ventilation that you know of?—Yes;

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when a ward does not depend upon itself for ventilation, and where there is one great central extracting shaft communicating with every ward, I think it will be attended with great danger, inasmuch as the English open fire is very likely to cause a back current of foul air to the ward should the doors and windows be shut, and there are no other means of supplying the demand for the fire. I think that every ward room should depend upon the means given to it for its own proper ventilation, such as an open fireplace, shafts in the ceiling to the chimney for extraction, and minute orifices all round the skirting for the admission of fresh air, &c., &c., which I think is all that is necessary to have complete ventilation.

4382. (*Sir H. K. Storks.*) And open windows?—Yes.

4383. (*Mr. J. R. Martin.*) Your impression is, that natural ventilation is that which ought to be relied on?—Entirely; but by natural I mean more than simply doors and windows as above stated.

4384. (*President.*) Only you would not carry natural ventilation so far as to have windows on both sides?—I think that is not necessary in all cases, as it must depend upon the size of the wards.

4385. Do you think you can get enough natural ventilation without that?—Yes; the wards in the Brussels military hospitals had not all cross ventilation; they chiefly depended for ventilation upon the atmosphere coming in through apertures and simple shafts for taking it out; but that cannot be carried out with our open fires, for as soon as they are lighted and the windows and doors closed, the air will be drawn down the shaft. In several of the barracks in England where there are apertures in the ceilings, I have seen the soldiers stop them up, because when the fire is lighted the draught is so strong as almost to blow out a candle.

4386. Do you approve of hollow rafters communicating with the air on each side of the roof cut off in the centre so as to admit the fresh air from windward and the foul air escaping to leeward?—I have never seen that in operation; but I would not trust to the windward for the admission of fresh air, or to the leeward for the escape of the foul. I think that an open fire-place with a draught up it, and tubes connected with the chimney for the purpose of extracting the foul air from the centre of the room is all that you require, as regards extraction of the foul air of a room, in addition to doors and windows, &c.

4387. Have you seen the system of ventilation in use in any of the prisons?—I have seen Colonel Jebb's plan at Pentonville; but I have no practical knowledge of its working.

4388. (*Sir James Clark.*) Would you warm the air that you admit in the winter?—No; most people condemn that for soldiers.

4389. Would you have no warmed air in the hospital?—My opinion is unfavourable to it.

4390. (*Dr. A. Smith.*) In the large ward at Fort Pitt, how are the windows placed?—I forget.

4391. Do you recollect that great complaints were made in consequence of the patients catching cold from the windows being opposite each other, and often opened on the opposite side?—No; but in the Paris hospitals the patients told me, and the Director of La Riboisière also told me, that it was necessary to have curtains, the draught being so great at times from the pumping in of the air, without the windows being opened at all. When we got to Paris we found at La Riboisière, at Beaujon, and at the new military hospital at Vincennes, that instead of the windows being used as a means of cross ventilation, which is said to be the cause of the superiority of these hospitals, they could not be opened, as it would interfere with the artificial system of ventilation.

4392. (*President.*) If you had the management of the Paris hospitals, would you not do away with the artificial ventilation, and open the windows?—If I had the management of the Paris hospitals and had the means, I would do as an authority on the construction of barracks and hospitals said he would do if he had the means, and I would do as some of the doctors said they would do if they had the means, and as the private soldiers said they wished to have done, namely, to have open fire-places and small rooms to contain ten or twelve men, with windows in any good position; for where the system of ventilation is such that you depend upon pumping in and extracting for fresh air, it does not matter whether the sides of the wards are windows or brick walls.

4393. (*Sir H. K. Storks.*) I suppose that the windows in the Paris hospitals could be opened without injury to the patients?—Certainly not, except in summer time. I think that if windows between the beds were opened in winter, it would be very injurious to the patients that are near them.

4394. (*President.*) What you object to is, not to their having these lateral windows, but their not using them?—A Frenchman half the year lives in the light under the trees, and he likes the light when he is in hospital. In summer these lateral windows may be opened with impunity; but in the six or eight winter months it would be injurious in my opinion. I have also great objections to such large wards, for this reason, that a very serious or dying case placed among so many others disturbs all the rest.

4395. (*Mr. J. R. Martin.*) Would not that grievance be very much enhanced by a ward being small?—I think quite the contrary. If you have a small ward with ten men, and one man is dying, nine men will be disturbed; but if a man is dying in a ward containing 40, you disturb 39 men.

4396. (*President.*) But the question of the size of a ward is one surely which stands on quite different grounds from the question as to the position of the windows?—I think the position of the windows must depend upon the size of the wards. If you have small wards for 10 or 16, you cannot have the construction of the Paris hospitals. If you require accommodation for any large number of sick, say 500, in such a case, if you had small wards, and of the French construction, the numerous blocks would be spread over such a space of ground that everything necessary for the administration of the hospital, such as, the kitchens, dispensary, stores, &c., would be at too great a distance from the wards.

4397. (*Mr. J. R. Martin.*) Do you not think that the difficulty of good ventilation increases in proportion to the smallness of the apartment, and that a large ward is more easily and equably ventilated than a smal one?—I think that a small ward for two is far more easily ventilated than one double the size would be for four. If you have one or two bad cases among 40 people in one ward, the foul air is diffused so rapidly that the whole 40 people will have a hospita atmosphere within that ward. That I observed myself in Paris; none of the wards that I saw were sweet; and I think that our own hospitals, if each patient was allowed the same amount of space with the means of changing the atmosphere, would be more sweet. I consider all the hospitals in Paris to have the peculiar odour of a hospital atmosphere. I do not think so highly of their systems of artificial ventilation, or their mode of construction, as some others do; taking into consideration the peculiarities of the Englishman's habits and climate.

4398. (*President.*) Your observations as to the mode of construction do not apply, when they do not make use of it?—My observation refers to those who approve of their systems of ventilation, and mode of construction of hospitals.

4399. You think that a thorough draught does not make a better ventilation than any other kind of draught?—I believe that the reason why physicians and others in this country say that the French system of construction of hospitals is better than ours is because that system admits of a cross ventilation, which in my opinion is not carried out; therefore, they come to conclusions upon false data. In the winter, in all the Paris hospitals, whether ventilated by artificial means, or whether the air is simply heated by stoves, the air that comes in does not come through

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the windows at all times, nor are the cross windows always used for ventilation, for in all the wards which were ventilated by machinery, as at La Riboisière, one pavilion at Beaujon, and the new military hospital at Vincennes, the windows are ordered to be kept shut.

4400. (*Sir H. K. Storks.*) Do not you consider that light is essential to the recovery of the sick?—Certainly; but not too much.

4401. (*President.*) Are not the sun's rays useful?—Yes; but the sun's rays may be too powerful, and prove a source of annoyance, even of injury to patients.

4402. (*Sir H. K. Storks.*) Is not a hospital better with plenty of light in it, than to be very dark?—No doubt; but you may have too much light as well as too little. If cross windows (with beds placed between them) are to be depended upon for ventilation, the patients near those windows in the winter season might be seriously injured by their being opened.

4403. (*President.*) The changes made at Netley will then be very injurious, by which there will be a thorough draught through each ward?—No; for the windows are placed at the ends, and not at the sides.

4404. You have equally got there cross light from the windows?—No; it is lengthwise. What I understand by cross light is, having windows between the beds; that is in opposition to length light; at Netley the windows are length light.

4405. But they are at both ends?—Yes.

4406. Therefore, so far as there being too much light, or admitting too much sun, that mode of construction would be defective?—No. A man lies opposite a wall, and he is not so much annoyed by the light, as if he lay opposite a window.

4407. Did you ascertain, when you were at Paris, the rate of mortality, or the sickness in the French army?—The return has been asked for.

4408. Would it include the nature of the diseases?—Yes.

4409. Did you inquire into the scale of diets in the hospitals?—Yes; and they will be laid before the Commission.

4410. Can you state generally what they are, as compared with the diets in our hospitals?—The scale is laid down, and the authorities consider that that scale includes everything requisite.

4411. Did you see the arrangements for cooking in the hospitals?—Yes, we saw the kitchens.

4412. Are they better or worse than ours?—I think some of ours are as good.

4413. Have they the means of baking?—Yes, they have a scale of diet, and they have the means of cooking it accordingly.

4414. They can do more than boil?—Yes; and I believe by our regulations here, all hospital kitchens will be fitted up with an oven; about three years ago, I think, I first heard that this was determined upon.

4415. Has this been done?—I do not know. In many hospitals where I have been stationed, we had an oven in the range.

4416. Did you see the kitchens in the Paris hospitals?—Yes.

4417. Are they about the same as ours?—Much the same. The French soldier in barracks gets nothing but beef, bread, soup, and vegetables—and these are cooked in their kitchens.

4418. Are they much the same as ours?—The diet of our men in barracks is more varied than theirs. The French soldier has soup and beef for breakfast, and the same for dinner with bread and vegetables.

4419. Are the means of cooking the same with them as with us?—They have large coppers, in which they boil just the same.

4420. Do the men complain of it?—They informed me that their diet was not varied sufficiently, and they complained of it.

4421. Did you ever know of our men complaining of want of variety?—I do not know that I have. In the regiments I have served in, they have generally had baked meat Sundays and Thursdays, at least such is my impression.

4422. (*Sir H. K. Storks.*) But was not that in India?—No, last winter at Dorchester, in the 15th Hussars. The meat was sent to a bakehouse in the town. I do not mean that it was baked in the barracks.

4423. How is the baking paid for?—I think the men paid for it by losing the vegetables on that day.

4424. (*President.*) Should you not say that that is very unfair with regard to the soldier?—No doubt of it.

4425. Would it not be much cheaper done if the public were to construct ovens for them?—It would be cheaper to the soldier certainly, as he has to pay for having it done now in some way or other.

4426. How were those hospitals supplied in France, by what department, and what course is taken when a new hospital is to be built?—The engineer officer provides the building, and the Intendant everything within it. If a hospital is to be built a medical officer is put upon the board; they do not necessarily adopt his opinion, but he is there to give it. The engineer generally, after the plans are submitted to him, lays them before the Minister-of-War and he gives the orders. As to repairs or for hospital damages, the soldier pays as in our army, if wilfully done.

4427. There is nobody attached to each barrack to look after the repairs of it?—The engineer department does everything that is required. There is no barrack-master, nor clerk of the works. The engineer officers do all that in France themselves, and they assess the damages; but the soldiers or officers can appeal against them, I believe.

4428. Do you know whether such things as small repairs are much delayed in consequence of that system?—I think not.

4429. Have they fewer forms to go through?—I suspect that their forms are more simple than ours; but it must be taken into consideration that in France there is a different form of government; there are no returns called for by the House of Commons, as with us; there is no one to dispute the orders of the war minister, nor individual members of the House of Commons to call the minister of war to account for the expenditure in the way that ours do.

4430. (*Sir H. K. Storks.*) Do the men in a French barrack eat in the same room in which they sleep?—They eat in their barrack room upon their beds or any where.

4431. Is the French bedding better than the English?—The French bedding in barrack and hospital is better, they have two mattrasses, one of straw underneath, and one above of flock; they have a pillow and a pair of sheets, and a white blanket, and the sheets are changed in the hospital as often as necessary and in the barracks once in 20 days. No man in a barrack sleeps in another man's bed, if a man goes on guard, the sheets are taken away and a clean pair is given; the beds are not turned up. The men can smoke, and they can sleep in the day time in their rooms. Their arms are kept very much as ours are, they are in four different places.

4432. Is there any stoppage made for the hospital?—When a French soldier is in hospital, his pay is stopped altogether.

4433. Who supplies them with fuel and light?—The intendance supplies them with fuel and light according to the number of rooms.

4434. Who supplies the ration?—That is supplied also by the Intendant.

4435. Therefore there is one department which supplies everything except the repair of the building? Yes; the Intendant supplies utensils, bedding, food, and fuel; the engineer supplies the building and keeps it in repair.

4436. Are they well supplied with regard to the utensils, such as drinking cups and things of that sort?—The utensils are good and ample.

4437. Any chamber utensils ?—Not in the barracks. An earthenware one to each bed in the hospitals.

4438. Was there any urinal ?—In barracks, the soldier goes down below to the urinal, which is placed at the bottom of the staircase.

4439. Not in the ward ?—No, not in the barrack room.

4440. (*Dr. A. Smith.*) When additional stores are required do they report the same, or how are they obtained ?—In the civil hospital there was a linen store, and a store for dirty things, but the medical officers had nothing to do with that ; that was under the director, or governor of the hospital.

4441. I spoke of a military hospital ?—There is a large store there.

4442. Can that store be got at at any moment ? Could they provide from that store anything that was wanted ?—I understood that they could provide at any moment for any number of patients the hospital could hold.

4443. Without having to send to any general store at a distance ?—Yes ; I understood so.

4444. (*President.*) Did each hospital have its own store ?—I understood so. If they had 600 sick, they had a complement for 600 sick with the supply of bedding that was necessary, and a change.

4445. Resembling the naval hospitals in this country ?—Yes, much the same thing, I believe.

4446. What is the division of the duties in a hospital as between the intendants and the medical officers, do they take any part in the management of a hospital ? —There are three elements in a French hospital : first, the treater of the sick, then the administrative element, then the persons who carry out the orders of the other two. The administrative element consists of the intendant and comptable, is a branch of itself, and essentially composed of military men. The comptable is the resident governor of a military hospital, and is an officer who has risen from the ranks. The intendant is also a military officer, and must have been of the rank of captain before entering this branch of the service.

4447. Is he under the comptable ?—The comptable is under him.

4448. He is more a house steward of the hospital, is he not ?—He is the governor, the doctor merely treats his patient.

4449. But he can do nothing except under the direction of the intendant ?—Nothing.

4450. The intendants are the governors of the hospital, are they not ?—Yes, but the relative position of the comptable and the surgeon is, that the comptable is the governor in the absence of the intendant. He resides in the hospital.

4451. Is it not more like a London civil hospital, where the house steward is the administrator of the hospital, and there is a committee of governors over the whole ?—He holds a higher position, I think, than the house steward in a London civil hospital ; he is supposed to be superior to the medical authority, which I do not think a house steward in a London civil hospital is.

4452. The evil of the system, as I understand it, is that they have a veto to a great extent upon the treatment of the patient ?—All the evidence that I could collect is contrary to that, as far as I could understand from the surgeons themselves, their orders for the treatment of the sick were supreme—confining themselves generally to the scale of diets as laid down, and which is carried on in the same way in civil hospitals.

The French have laid down a scale of diets in all their hospitals, and therefore all that the doctor can do (unless in very extraordinary cases) is to confine himself to that scale; he can only alter it by giving half portions of one and quarter portions of another, and so on.

4453. (*Sir H. K. Storks.*) Suppose the medical officer considers it necessary to give a patient a certain article which the intendant has not got, can he compel the intendant to procure it ?—If it were a case of life and death I was told that he could, but that in ordinary cases he could not.

4454. (*President.*) Did you not hear that the intendant had too much authority in these matters ?—I heard complaints from the medical officers that they wished to be independent of the intendant, as if he disputed the orders of the medical officer, as regards the sick, their only appeal was to the Minister of War—and that this was a lengthened course.

4455. Practically have not the reports with regard to the character and efficiency of the medical officers been sent through the intendants to the Minister of War ?—As far as regards the reports made of medical officers, I heard that they were inspected by an inspector from Paris, only once a year ; and that if at any time a colonel of a regiment had reason to find fault with his medical officer, he reported that officer to the general of division ; but that in a general hospital it was the duty of the comptable, under such circumstances, to report to the intendant, and the intendant to the general of division, or Minister of War.

4456. If it be true that the medical officers are very much dependent upon the intendants for their prospects in their profession, are they likely to make reports against the intendants ?—I do not think that they are dependent upon the intendants as to their advancement. There are certain rules laid down in the French army ; at the first step two-thirds of the promotions are by seniority, and one third by selection. I asked how the selection was made, the answer was, " Interest with the Minister of War."

4457. (*Dr. A. Smith.*) Suppose that is the case, is it not very natural that the medical officer would avoid doing anything that might give offence to the intendant, as he is the medium of communication between the hospital and the Minister at War ?—I do not think that the intendant is the sole medium of medical communication, for the medical officers are also reported on annually by the inspectors of hospitals.

4458. There is an inspector-general for each division, and in the course of each year they make their journeys round those divisions, and then make reports of what they have seen, and also what they have observed in reference to the medical officers, and send them in to the Minister of War,—is not that the course? —I understood that there were seven inspectors at Paris, and that one of them made an annual excursion, and reported upon the character of every medical officer that he inspected.

4459. Are the appointments of the medical staff in those great hospitals by roster, or how ?—The appointments to the hospitals are by competitive examination, that is to say, a hospital is supposed to be a prize, not for increase of pay, but because there is less discipline, and a man may live cheaper. The surgeon of a regiment is obliged to go to certain expenses, and he is under the control and discipline of his commanding officer.

4460. They have no regimental hospitals ?—Yes, but for trifling cases ; but getting into a divisional hospital is supposed to be a prize. The surgeon of a regiment has to pass an examination to get to it.

4461. Are you not aware that there is a regular rule in the French service, that in consequence of their having no regimental hospitals, and in consequence of its being known that officers must serve two and sometimes three years with a regiment, and that they lose so much knowledge during that time, that they are, after having served that time, re-appointed to general hospitals ?—The surgeons, I understood, were appointed for some few years, and the divisional hospitals were held out to them as rewards.

4462. (*President.*) Did you examine their forms and books at all ?—Yes.

4463. And case books ?—They have no case books such as we have.

4464. Except what every man would enter for his own benefit as the result of experience ?—Yes.

4465. Is that exacted from them ?—No.

4466. Practically do they generally keep case books ?—Not as we do, theirs is a very simple form.

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4467. They have, I suppose, a book of discharges and admissions?—Yes; and the form will be laid before the Commission.

4468. (*Sir James Clark.*) Do they not keep a history of the cases?—Not as we do.

4469. I suppose there is a form by which the diet is prescribed for each separate patient, which is brought to him?—Yes; the patient gets his diet in this way—an orderly from each ward goes to the kitchen for it, and the sister of the kitchen sees that it is distributed properly, and a sister of the ward sees that the patient gets what he is entitled to.

4470. How does the orderly know what the diets are?—It is marked on the ticket of every bed.

4471. Does much disease exist in the nature of hospital disease?—I was told that no special disease existed, or originated in the hospitals, such as hospital gangrene, erysipelas, or cholera, &c.

4472. Have they a special corps for nurses?—The present Emperor has just commenced forming a corps of sisters for military hospitals.

4473. They have men nurses also, have they not?—Yes.

4474. In what proportion?—In the men's wards, for 30 men they have about two men and one woman; and in the female wards they have two women and one man for the same number.

4475. In the military hospitals how was it?—The Emperor has just instituted a new system of sister nursing.

4476. (*D. A. Smith.*) From what source are the sisters obtained?—They are sisters of charity, and they pay them in civil hospitals—I think 400 francs a year.

4477. Is that paid to the sister herself?—Yes; with food and lodging in addition.

4478. Are not the sisters obtained from some general establishment?—From the Hotel Dieu, I believe.

4479. Do they pay the money to her?—Yes, in the civil hospitals; in the military hospitals it is not yet decided upon.

4480. (*President.*) Is their nursing good?—Very good indeed; as regards the objection that was made by the French medical officers to being placed under the intendants, they said that the sick suffered from the position which they held—that the system was such that the intendant would not obey the orders of the medical officers, as he had to carry out the orders of the Minister for War, and that the medical officers were to confine themselves to certain things connected purely with the treatment of the sick.

4481. (*Dr. A. Smith.*) Do you consider that the present diet of the soldier is sufficient for an able-bodied man doing the duty that the soldier is required to do?—I had to report in my annual report two or three years since that there was no improvement that I thought necessary in this respect; therefore, having made that report, I must say that under the rate of pay which the soldier has now, I do not think it can be improved; at the same time I think that a soldier does not get sufficient food, but his pay must be increased to give him more.

4482. (*President.*) If you gave him an enlarged ration, not only of bread and meat, but of all the necessaries that he gets for himself, and had one uniform stoppage, so as to ensure a man in every climate enough, would that be an improvement?—A very great improvement. I think it is necessary for the well-being of the soldier. I think that in the cooking it is necessary to make allowance for wastage; and the three quarters of a pound of meat that a man gets is very little, especially if it is not properly cooked.

4483. If the stoppage were made to correspond with that which is now stopped, first from his ration, and secondly from his messing, about $8\frac{1}{2}d.$, could you not give the soldier three very good meals?—Yes, but the $8\frac{1}{2}d.$ includes, in the infantry, the washing, and in the cavalry, the 10*d.* that a man pays for his ration includes oil and sand, &c., for cleaning saddlery, as well as a greater sum for washing than the infantry man pays, and therefore you must make allowance for the extra sum expended by the cavalry soldier for those items in framing a charge for him.

4484. (*Dr. A. Smith.*) Should there not be at least the means of baking, boiling, or roasting?—I think so.

4485. (*President.*) You gave evidence before Mr. Stafford's Committee in the House of Commons, as to the manner of conducting examinations for first entry into the army medical department?—Yes.

4486. Do you think competitive examinations good or not?—Yes; I said that I thought a competitive examination was necessary.

4487. Are you at all acquainted with the examination instituted by the East India Company?—Only from hearsay.

4488. Is that the kind of examination that you mean?—I do not know, but what I mean by a competitive examination is that you must have a practical competitive examination; but it would be useless to attempt that unless the inducements held out were sufficient to bring men forward for that practical competitive examination.

4489. Supposing that a competitive examination were held out, do you think that the competitive examination would frighten men away?—No, not if sufficient inducements were held out.

4490. Are you aware that in the East India Company, since the introduction of the competitive examinations, although the pay and emoluments have been unaltered, they have more candidates now than before?—No, I am not.

4491. If that is so, would not that satisfy you that the competitive examinations have rather attracted men than driven them away?—I was not aware of that, but I should have thought that it was the reverse; and I can only account for it by supposing that before the competitive examination was introduced, the patronage was in the hands of the directors, and whether a man was a good or a bad man that patronage obtained him, after a certain examination, entry into the service, and not that the competitive examination itself brought more men forward to compete.

4492. When first the competitive examination of the East India Company was introduced, there was no question of patronage, but latterly they have got better men, and in greater numbers, than they did in the earlier competitive examinations?—If the period of the first competitive examination was sufficiently long to test that, well and good.

4493. But does not that show that the competitive examination does not frighten men away?—It will not frighten men away if the inducements are such as to make the service a popular one.

4494. Whether the service be a good or a bad one, it is not the competitive examinations that will frighten them away?—Yes; I think if the service is a bad one, that competitive examinations would frighten men away.

4495. If it is a bad service, an ordinary examination would frighten them away?—And so it has done; men will not come forward at all if a service is a bad one.

4496. Are you acquainted with the subject of the inspection of senior officers over the juniors?—Yes, I am.

4497. Do you think that it is right that it should be carried to so great an extent?—I think that an inspecting medical officer in our army should be a man of greater age and experience than those whom he inspects; at present, a staff surgeon of the first class inspects without necessarily being of greater age or experience than those he inspects.

4498. You would not trust inspectorial duties to any rank lower than that of deputy-inspector, and you would make the first-class staff surgeon an executive officer?—If I had the modelling of the department, I would abolish the rank of staff surgeon of the first class. I consider it an injurious one to the service. I think we should increase the number of our higher ranks of deputy-inspector and inspector, and reduce that rank altogether.

4499. You would raise the position in pay and emoluments of the regimental surgeon, the present second-class staff surgeon, to compensate him for the loss of the other grade?—I would give them the position the staff surgeon first class now holds, after a certain number of years' service, and abolish the other grade altogether.

4500. What is your objection to the examination of the first-class surgeon?—I think that the direct interference by men of about the same standing, and they may be even juniors, is injurious to the service, by destroying the zeal of those inspected. A staff surgeon of the first class, or other inspecting authority, has the power of interfering directly in the treatment of the sick.

4501. Practically, does he do so?—Yes, I have known instances of it. I have been interfered with. I have been ordered, since my promotion to surgeon, and within the last ten years, by a staff surgeon of the first class, to alter the prescription I had written for a patient.

4502. And against your own judgment?—Yes, but I did not remonstrate, for I considered he had the power,—it is a matter of discipline.

4503. But that power would exist just as much in the hands of the deputy-inspector?—Yes, but he would be a man of much greater age and experience, and consequently more likely to do his duty with courtesy and judgment, than a man who is a junior or of nearly one's own standing; and I also think would be less likely to interfere with the treatment at all; and I think that this interference has chiefly taken place between men of about the same length of service.

4504. (*Dr. A. Smith.*) Do you mean to say that a direct order was given to you by a staff surgeon of the first class to change the treatment of your patient, and if so, did you adopt the treatment he prescribed?—Yes.

4505. (*President.*) Was it said in the way of an order or as advice?—I took it as an order, I felt much annoyed at the time, but I did not remonstrate, as my acquaintance with the staff surgeon first class was then of recent date.

4506. (*Dr. A. Smith.*) Was it not your duty to have remonstrated then?—It might have been my duty, but I would rather not remonstrate under such circumstances, and if it happened again I should do the same, unless I felt that the patient would be injured by the alteration. I did not remonstrate, as it was only one simple medicine that was substituted for another. If I had thought that the patient would have sustained any injury, I would not have assented, but I considered that the officer had the power, and I did not call that power in question.

4507. Do you understand, from your experience in the service, that that is anything like the ordinary practice?—My experience in the service is this, I know that instance with regard to medicine; with regard to food, I know an instance in which a medical staff officer in charge of a sick man ordered that sick man half a fowl, and the prescribing officer did so upon the express wish of the man, who was supposed to be dying. The fowl was entered in the diet-roll, and the staff medical officer, who was superior to the prescribing officer, found fault and struck the fowl out of the diet-roll. The prescribing officer went home, bought a fowl, had it cooked at his own house, and sent it to the patient, and the patient eat it with great relish. The superior medical staff officer by accident found this out, and made a special report to the Director-General of the army, against the prescribing medical officer, who is now the Director-General of the Army Medical Department.

4508. (*President.*) The fowl was prescribed, I presume, not to restore the man to health, but as an indulgence to the man in consideration of his position?—All extra food may be called an indulgence. A man may be said to be dying, and yet he may live for six weeks or two months, or more, and if we gave men only what was necessary to restore them to health, I do not think we should, as medical men, be fulfilling our mission. The interference of the staff surgeons of the first class, at Scutari, was carried to such an extent, that the principal medical officer had to remind them that the regimental surgeons were not candidates at Chatham; and he had also to remind the regimental surgeons that they did not act with proper submission to the authority of the staff surgeons,—or words to that effect. This showed the feeling between the two ranks.

4509. Were the staff surgeons inspectorial officers, at Scutari?—Yes, I believe they were, at that time.

4510. Although there were deputy-inspectors there?—I do not think that the deputy-inspectors had arrived in sufficient numbers, but the staff surgeons of the first class were inspectorial officers, to the best of my belief.

4511. Subsequently they were converted into executive officers?—I did not know that.

4512. Originally, the rank of first-class staff surgeon was created, I think, to reduce the number of executive officers?—No; my opinion is, that Mr. Guthrie states that the reason why he recommended this rank to be created was, that he should have a cheap substitute for the deputy-inspector; as he found in the Peninsula six or seven regiments inspected by a staff surgeon, who, not being of superior rank to the regimental surgeon, could not do the duty, and it was necessary to have them made so, and he recommended the creation of the staff surgeons of the first class.

4513. Is the power of the medical officer sufficient, in your opinion?—With regard to the treatment of the sick, I have every power, in my regiment, when serving by myself at a station.

4514. At the beginning of the war, how was that; had you any difficulty with the purveyors?—I have never found any difficulty with the purveyors, but I have never been in positions where I was likely to do so; whenever I have served with purveyors, we have always acted together for the good of the service.

4515. Do you think that the system of making requisitions is capable of improvement?—With regard to requisitions for food and medicines, and the ordinary supply of medicines that we get, I do not know that any alteration is required; but, under certain circumstances, a regimental surgeon's requisitions have to be countersigned by a staff surgeon first class; and I think that under such circumstances this counter-signature ought not to be required.

4516. Suppose a time of war, different regimental surgeons might take different views as to the supply, but the supply to the regiment ought not to depend upon that, but upon the necessity of the case, and somebody must say whether those things were necessary or not?—I think the treatment of the sick should be left entirely to the regimental surgeon, and if he wants certain medicines he ought to get them, or he ought not to be held responsible for the sick.

4517. Suppose the case of an army cut off from its transport, and with a very small supply, what should be done then?—That ought to be decided by the particular circumstances of the case.

4518. But in such cases it would not do to comply with every requisition without considering what applications might come in from other regiments?—Quite so; then it must depend upon the amount of the supplies you have in store.

4519. (*Dr. A. Smith.*) Would you hold that in Great Britain every medicine that was asked for by the regimental surgeon, or any quantity that was asked for, should be invariably given without any supervision?—No; I would always have at the head of the department an inspector-general over everything: I am referring to the question whether the staff surgeon above me should countersign my requisition before it reaches the supreme authority. I wish to have one authority to refer to, and not that I should be independent of the director-general, or principal medical officer of an army or division of an army.

4520. (*President.*) You have expressed some opinions as to the mode in which promotion should be

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carried on, whether by seniority or by selection?—I think that having ensured good men on entry by a proper competitive examination, that ordinary promotion afterwards should be by seniority, unless there is anything against a man, and which a court of inquiry should confirm. If the head of the department thinks it necessary to reward a man who has shown peculiar zeal or talent he should be allowed to do so by brevet rank, and thus he would be able to reward extraordinary merit without doing injustice to the man of ordinary merit.

4521. What do you mean by brevet?—Take the case of a surgeon of a regiment, who distinguishes himself in the field, or in peace time, when any epidemic is raging; I think the head of the department should have it in his power to give that surgeon a step of rank, but without removing him from his regiment; and giving him the pay and retirement of the brevet rank would be a reward.

4522. But that would only be a temporary reward?—The brevet carrying pay with it, and carrying retirement with it, would be a substantive reward.

4523. By brevet rank carrying substantive pay with it, you mean substantive pay without substantive rank?—It is done in the other branches of the service, and supposing it were thought fit to reward a surgeon, why not give him the brevet of deputy-inspector, with the advantage of increased pay, though kept doing the duty of a regimental surgeon?—I would let him go up the list as a brevet officer does in the engineers or artillery.

4524. But still not before his brother officers?—No; and when he became senior regimental surgeon, I would then say to him, You are now on the active list of deputy-inspectors by your regular promotion, and must leave your regiment.

4525. As I understand you, the officer would have the advantage of having the rank and pay of a deputy inspector, and the duties of a regimental surgeon, until he could become promoted by seniority to be a deputy-inspector?—Yes.

4526. Then he would be just where he was?—Yes.

4527. So that it would be only a temporary reward?—Yes; but meanwhile a very great one in difference of pay and rank, and if he wished to retire the difference then would be permanent.

4528. If there were two officers who had no means of performing any great or distinguished action, either in peace or in war—one notoriously indifferent and listless, and a man of no capacity; and another extremely able and very zealous, you would promote the listless and bad officer first if he stood before the other?—Under such circumstances, I think you should not allow the notoriously listless and indifferent officer to remain in the service at all. If he does not deserve promotion he ought to be driven out of it, or punished in some way.

4529. Can you do that?—Yes, certainly.

4530. (*Mr. J. R. Martin.*) Without a court-martial?—Yes; by a court of inquiry, consequent on a report.

4531. (*President.*) One man might be a very clever man and the other the reverse, but both very good; would you carry the least intelligent one on at the same rate as the other?—No; I would give the clever man the brevet if he deserved it. I wish to explain that it is my opinion that, the nature of the service, the immense number of stations there are for medical officers, the nature of the reports made on them, and the varied duties they have to perform, are such as to prevent the head of the department receiving a sufficiently correct estimate of who is or who is not most deserving of ordinary promotion.

4532. There are reports made by inspectorial officers all over the world?—Yes, but they vary; the inspectorial officer at one station makes an annual inspection only. I was in India nearly four years without being inspected.

4533. Are there not case books which are returned home to the Army Medical Department, and do they not give facilities for forming an opinion?—No, because the registers go for years about with the regiments; they are not sent home annually, they are sent eventually to Chatham; but I do not think they afford the means of finding out a good officer, nor do I know that they are examined for that purpose.

4534. Are the registers of any use?—That I cannot say, after they are sent away from their regiments to Chatham.

4535. Do you not think they are of some use as books in which a man may note down everything that is important in his mode of treatment?—I gave evidence before on that subject, and I said that I considered what was required from us was necessary for the public service.

4536. What is the object of it?—To supply information on various points when required; for example, to the House of Commons, War Minister, Commander-in-Chief, &c.

4537. Could you not furnish that by the admission book?—We have an admission book. I remember an instance in the Isle of Wight; a soldier was discharged the service, and after a time he wrote to the authorities to say that the cause of his discharge was his having received a wound when at field exercise; on referring to my register, I found an entry made in full, and was able from the registers to refute the statement.

4538. Would not the admission book have done exactly the same?—I do not think so; I think the form does not allow sufficient space, and I think, therefore, our registers are necessary.

4539. Do you not think that a young officer who is told to enter every case, important or unimportant, has a perfect confidence that his register will be so voluminous that nobody will look at it?—I do not say that a daily entry is necessary; it is left now a good deal to the discretion of the medical officers; but I think it is a good system for young officers to record cases in that way; it is also a check on the diets, on the wine, and on other things; and in this country I think great loss to the public service will take place if our forms are much curtailed.

4540. If it is valuable in a scientific point of view, as a record of disease and its treatment, would it not be very important to send to officers going to China the case books of the last China war?—Yes; no doubt they might be useful.

4541. Would they be of no value?—That depends on the medical officer who wrote the former reports.

4542. Suppose you were told that those case books had not been sent to the officers going to China, on the ground that they would give us information, would you say that the system was a good one?—I should say that it was the doctors who wrote their cases and reports so badly that were at fault chiefly, and not the system.

4543. If you can tell that by the case book, cannot you tell what a man is?—I do not assume that a doctor writes anything wrong about his patients, but that he writes what is really the case; but I think that at times medical cases can be written without a man knowing anything of the patient, or treatment of disease, and therefore I do not think a case book a sufficient test of zeal or ability.

4544. (*Mr. J. R. Martin.*) By making promotion contingent upon seniority, would you not extinguish competition?—No; I think if you can discover who is the best man, that you ought to promote him before others for the good of the public service.

4545. Has it not always happened that where public servants have been rewarded on the ground of length of service, rather than on the score of excellence, science has languished?—That I am not capable of saying.

4546. Has it not been stated by Mr. Henry Marshall as an axiom, that competition is as necessary to the advancement of science as to the promotion of the mechanical arts?—Competition, if carried out properly, I think is the best system for reward.

4547. How can you have competition if there are not rewards for excellence?—I am referring to the nature of the service of the army medical officer, when

I say it is difficult to select for merit; if it were a public competitive examination for promotion by merit, then it would be just to select one man and put him over another; but this public competitive examination would be with us quite impracticable.

4548. (*President.*) But might not the general character of the men be judged of by the reports?—I do not think, considering the nature of our service, that reports on the character of medical officers would enable you to select juniors for promotion, without doing injustice to their seniors.

4549. Are you aware that it is done in the navy?—I think a great deal is done by seniority too.

4550. (*Mr. J. R. Martin.*) Are you aware that in the Medical Department of the Indian army the number being very nearly the same as in Her Majesty's service, promotion has been always by the rigid rule of seniority?—Yes.

4551. Has that answered, do you think, well for science, or for the interests of the Indian army?—I do not know.

4552. Are you aware that the rigid rule of promotion by seniority is about to be abolished in the Indian army?—Yes.

4553. By the urgent desire of Lord Dalhousie?—I have not heard that.

4554. (*Dr. A. Smith.*) With regard to rewarding young and deserving officers by brevet rank, would it not be difficult in such a case as this:—suppose I am senior surgeon and entitled to promotion if a vacancy arise, and that a vacancy does not arise for a considerable time, in the meantime you have signalized yourself by energy and zeal and ability, in the discharge of certain duties, and although you may stand twenty below me you are made a deputy-inspector by brevet, still remaining with your regiment; and when a vacancy occurs, and I am made deputy-inspector, I am sent to Shorncliff, and the regiment to which you belong arrives at Shorncliff, you having perhaps been made a brevet deputy-inspector three years before, you would take priority of me?—A principal medical officer of a station should ex officio be supreme, and would be so; all that I should claim under such circumstances, would be that he should collect my reports and returns, but not inspect my hospital,—this would be a further reward for the brevet.

4555. (*President.*) You mean that brevet rank should not compete with substantive rank?—Yes.

4556. (*Dr. A. Smith.*) Say that a senior assistant-surgeon is in New Zealand, and that a vacancy arises in Newfoundland for a surgeon, you have only one of two courses open to you, either to keep that regiment without a surgeon for two years, and leave it in charge of a very junior assistant-surgeon, or give the surgeoncy to some person nearer to it, and pass over the man in New Zealand?—I would have a competitive examination on entry, and after that an assistant-surgeon should be promoted by seniority to be a staff surgeon of the second class, and that promotion should be in England, that is to say, wherever the assistant-surgeon was serving he should come to England to study and be reported upon in a military hospital; and on his being reported fit for a regimental surgeon by the principal medical officer, he should be put on the roster for a regiment, and when a vacancy happened, if in New Zealand, he should be sent from the staff to that regiment. I think that great care should be taken before a man is appointed to be surgeon to a regiment, as it is one of the most responsible situations in the army, and a regimental surgeon has, I think, more power to do good or evil, in the ratio as he is a good or a bad one, than almost any other medical rank.

4557. (*Mr. J. R. Martin.*) Has it not been stated by Sir James Macgregor, that he found great difficulty in selecting men for inspectorial offices, even from the very best regimental surgeons; the duties of inspection implying a knowledge of human nature, consideration, and various qualities which are required in the exercise of control over other men?—I think Sir James Macgregor said that he took all those qualities into consideration in promoting to the rank of deputy-inspector and inspector, and not that he had any difficulty in getting inspectors. He promoted, he said, by seniority of service invariably from assistant-surgeon to surgeon, surgeon to staff surgeon.

4558. (*President.*) After that rank how was it?—From the staff surgeon of the first class to the assistant-inspectors they were all by seniority in the service.

4559. Have you any confidence in negative reports, that is, reports which say that a man must not be promoted because he is not fit?—I think that a man of ordinary zeal and ordinary talent should get his ordinary promotion by seniority. If a regimental surgeon is not promoted because he is a bad medical officer, you keep him in a position where, in my opinion, he can do more injury to the service than the rank above him.

4560. Among the combatant officers is not the Horse Guards system this, that a man shall be promoted from captain to major, and from major to lieutenant-colonel, unless he is reported unfit?—Yes.

4561. Did you ever know an instance of an officer being reported unfit?—Yes, many in my time, physically.

4562. I meant mentally—a man who was a bad officer?—Yes; I have known that.

4563. If the objections that have been made by the Director-General to your system of brevet be sound ones, do you see any method of rewarding superior and able officers?—There are only two ways that I see—by brevet or promotion by selection. I do not object to reward men for superior merit, but I think that men who are equally deserving, but who are not brought to the notice of the Director-General, should not be passed over in consequence of any influences that may be brought to bear in the case of the others.

4564. (*Mr. J. R. Martin.*) But are there such influences?—I suppose there are; and I should say that such influences ought to be prevented.

4565. (*President.*) If every promotion was made upon the recommendation of the Director-General, with the reasons for the selection stated in writing, whether the recommendation was adopted or not by the Commander-in-Chief; would not that be a check upon both parties?—No; I do not think you would treat the Director-General with proper respect if you gave him the power of selecting men, and giving him that power, make him state his reasons to the Commander-in-Chief for exerting it. His reasons for selecting a man for promotion over others must be based upon medical proficiency; and if he lays his recommendation before the Commander-in-Chief, and says, I wish Dr. Mapleton to be promoted, because he is a good operator, the Commander-in-Chief must take that recommendation; he cannot say that Dr. Mapleton is not a good operator.

4566. Suppose the Director-General produced all the reports that he had received, and said, For these reasons, I think he should be promoted over the heads of others; could not the Commander-in-Chief say, Although this is a meritorious officer, yet the account that you give of him is not sufficiently good to justify his being passed over the head of another man?—I think if you placed the Director-General in such a false position, you ought to require from him the character of every medical officer who was passed over, and not only the reasons why he promoted the other over their heads.

4567. Is not the Commander-in-Chief put in the same position, or the Secretary for War when he promotes a man to be General, as he has to publish the reasons in the "Gazette?—My objection to selection for merit in promotion is the difficulty of being able to determine the relative merits of medical officers. The medical profession is greatly one of opinion, nor

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do I think we are to be judged of in the same way as military officers, whose profession is less a profession of opinion.

4568. Is there not a great deal more difference, between two men, both members of a very scientific profession, than between two lieutenants in a company, who have nothing to do but to manœuvre the company?—I think that it is much more easy to determine the relative merits of two lieutenants than of two doctors, and that you require to exercise more observation with regard to the two medical men than the two military men. No man deserves promotion more than the quiet unassuming man who will get up at night and go to the sick readily and without murmur, with kindness and humanity in all his acts, but who will not perhaps write a good report; and my experience of the profession is, that in nine cases out of ten the best practical men are the worst at making reports;—yet that man will rarely be brought to the special notice of the Director-General for selection for promotion out of his turn; but another, who writes well and practises badly, will.

4569. My question referred to reports made of him by the senior officer, who would know whether he was an attentive and zealous officer?—I think, from the number of colonies that we have, there is a want of means of judging of medical officers by reports made on them; there are many stations where there are no superiors to report upon them. I was for years in India without a superior officer over me.

4570. Do you think that mistakes would be made?—I do not say that the Director-General would be guided by those who report, but I believe great mistakes would be made if reports alone were trusted to.

4571. Do you think that men would sometimes be promoted who were not the best men?—Yes, in six times out of ten.

4572. Is not that the case in seniority?—Yes, but the difference is, that in selection, where you do not promote the best man, you injure the service, as well as all the men who are senior to the one selected, and by doing that you destroy their zeal. In pure seniority you may promote a bad man, but you do not injure the better man who is just below him. If pure seniority cannot be carried out, I think that so many by seniority and so many by selection should be promoted in each rank, say two thirds seniority, and one third selection.

4573. (*Mr. J. R. Martin.*) Would not the third allotted to selection be taken by pure chance?—I think that certainty of advancement in the service is an element of inducement to enter the service.

4574. (*President.*) Is not certainty up to a certain point only an element, and do you not think that certainty may have an effect upon a man of middle age, while to a young man the prospect of rapid promotion by merit will be more attractive?—I think if the head of the department had the power to give reward by brevet, it would be far better for the service than very rapid promotion, as I do not think very rapid advancement is desirable in the Army Medical Department.

4575. Is not certainty an incentive to idleness, as an idle man knows that he will not suffer for it?—That is assuming that we have in our ranks men who will not exert themselves, unless they have something to gain. If such is the case to any extent, we are a more inferior class than is to be found in any other class of society. Military men in their regiments get promoted by seniority, if they have the money to purchase, and many never intend to remain there to get beyond a certain rank, yet they are not more idle than other people, and are as good officers as those who intend to remain in the service—at least such is my experience; and so I hope it is with doctors.

4576. (*Mr. J. R. Martin.*) Has it not been found in the Medical Department in India that owing to the certainty of promotion by seniority there was a great want of zeal?—I don't know; but I should like to see what the reports will be in the Indian army twelve months after the system of selection by merit has been in operation, and when juniors will be promoted for merit over the heads of their seniors.

4577. Has it not been found in civil life that what Dr. Samuel Johnson called the small certainty has so far operated as to destroy zeal in young men, and to take away from them the motives for exertion?—I trust to the good feeling of the surgeon that he will do his duty; there have been many men who will not leave their regiments for promotion, and who expect no advancement, and they have been second to none in the department.

4578. (*President.*) Do you think that the rest of the world are constituted in that way?—Yes I do; if a man is not entirely without a conscience, I think he will do his duty, whatever be his reward. In London, in civil life, there have been men who have risen to great eminence from merit, by taking to a particular branch of the profession; others have risen by having been patronized by noblemen, or persons of influence, others by merit alone, in opposition to all specialities or interests; but as good men are to be found in the country villages in England, where the rewards in a pecuniary sense are but small, and who often labour without any other reward than their own conscience.

4579. Then do you think that success in life has nothing to do with merit?—No; a man must have a certain amount of merit to succeed at all, but it is very difficult in the Medical Department of the army to pick out one man and pass him over another, without doing injustice.

4580. Is it not very difficult to take the senior man in all cases, without doing injury to the service?—There are certain situations to which the head of the Medical Department can appoint a man where he can do no mischief, either in the treatment of the sick, or other duties required of him.

4581. But in the case of an assistant-surgeon, should he be promoted to be a regimental surgeon?—I would first promote him to be a staff surgeon second class, and bring him under the surveillance of the principal medical officer of a military hospital.

4582. (*Dr. A. Smith.*) With reference to the head of the department having the power to place a man where he could do no harm, that power does not exist?—I am of opinion that all duties, except that of the actual treatment of the sick, are of comparatively little consequence to the service, and that a man may do less mischief in the higher ranks than as surgeon of a regiment.

4583. (*President.*) The duties of an inspector are more like the duties of a man at the head of a civil hospital, or the administrator of a hospital?—The treater of the sick is a man who can do more or less mischief to the service, according as he is a skilful doctor or not.

4584. The inspectorial duties are not of so high a character as they are not of a professional character?—Such is my opinion.

4585. (*Dr. A. Smith.*) Are there not a great number of regimental surgeons who make excellent regimental surgeons, but who, if you raise them from that rank to another, would fail entirely, having not the slightest knowledge of administrative duties?—Yes; but it would be unjust not to promote such men by seniority; and if they deserved it before their turn, I would provide for them by giving them brevet rank, and keep them in their regiments, obliging them to retire on completing 30 years' service, if found unfit for advancement.

The witness withdrew.

Adjourned to Wednesday next at One o'clock.

Wednesday, 17th June 1857.

PRESENT:

The Right Hon. Sidney Herbert, M.P.	T. Alexander, Esq., C.B.
A. S. Stafford, Esq., M.P.	Sir James Clark, Bart.
Col. Sir H. K. Storks, K.C.B.	J. R. Martin, Esq., F.R.S.
Dr. Andrew Smith.	Dr. John Sutherland.

President, The Right Honourable SIDNEY HERBERT, M.P.

Thomas Alexander, Esq., C.B., a member of the Commission, further examined.

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4586. (*President.*) You have prepared, I believe, a statement of the results of your inspection of the French and Belgian hospitals?—Yes, I have.

4587. Will you have the goodness to read it?—The following are the grades of the medical officers of the French army, with their effective numbers and military rank, namely:

	No.	Relative rank.
Inspecteurs-généraux - -	7	Major-general.
Médecins principaux, 1st class	40	Colonel.
Médecins principaux, 2nd class	40	Lieut.-Colonel.
Médecins majors, 1st class	130	Commandant.
Médecins majors, 2nd class	260	Captain.
Médecins aide majors, 1st class	400	1st lieutenant.
Médecins aide majors, 2nd class	400	2nd lieutenant.
Médecins sous aides - -	300	

Candidates for admission into the medical branch of the French army must possess the doctorate of medicine, and be from the age of 22 to 28 years. They undergo an examination by concours, and if selected they are admitted into the imperial military school of Val de Grâce, where they attend courses of lectures by professors specially appointed. The courses comprised are, 1st, lectures on clinical medicine; 2d, clinical surgery; 3d, hygiene and military medical jurisprudence; 4th, diseases and epidemies of armies; 5th, anatomy of regions; 6th, operative surgery and bandaging; and 7th, chemistry applied to hygienic art. The professors are appointed, and receive one-third more pay while so employed, until they are promoted to be inspectors-general, when they cease to be professors. Each professor has an agrégé, who assists him. The professors are always military medical officers, but none of lower rank than surgeon-major are appointed. The professors belong to the hospital, and they are in charge of divisions or otherwise. There are two courses of lectures of four months' duration each. The first course is from the 15th of January to the 15th of May, by professors in anatomy, chemistry applied to medicine, diseases and epidemics of the army, diagnosis, bandaging and applianees. The second course is from the 20th of May to the 20th of September, and the lectures embrace, first, practical chemistry; secondly, hygiene and military medicine; thirdly, operative surgery; and fourthly, bandaging and appliances. There are four lecture-rooms, besides rooms for practical chemistry, pharmacy, and practical anatomy. There is also a library and museum of natural history with anatomical preparations. But there are no model rooms, with models of barracks, hospitals, and field equipments attached to the school.

The candidates having been selected by concours, remain one year at Val de Grâce, where they attend the lectures which I have just mentioned, and hospital practice; they are examined every two months by each of the professors, namely, four examinations, and the fifth examination is conducted by a body of civil examinators. If they pass the fifth examination, they are admitted into the service under the head of médecin aide-major of the second class. The number of candidates generally attending these lectures is 40, but at present there are only 26. They receive a certain amount of pay during the year they are attending the above courses, and the year so passed counts towards their retirement; they are stated to be generally appointed to regiments on the completion of these courses.

Promotion in the service is partly by seniority and partly by selection; being from aide-major of the second class to that of the first class, in the proportion of two thirds by seniority and one third by selection, but they must have served two years in the second class before they are eligible for promotion. So also, with regard to the médecin major of the second class, the promotion is in the same proportion, two thirds by seniority and one third by selection, and he must have served two years as aide-major of the first class. For promotion to médecin major of the first class, one half goes by seniority and the other half by selection, and they must have served four years as major of the second class. Above the médecin major of the first class the promotion is all by selection, but an officer must have served three years in that rank before he is eligible to become médecin principal of the second class, and two years as médecin principal of the second class before he is promoted to the first class; and he must have served three years as médecin principal of the first class before he is eligible to be promoted to inspector-general. During war, and while serving in the colonies, the periods which I have mentioned are shortened.

If a medical officer is sick he has the same period granted to him for the recovery of his health as a military officer, namely, six months with his regiment. After that time he is sent to a hospital, where he may remain under treatment for two years and a half—total, three years; after which period, if he continues unfit for the service, he must retire. A medical officer can retire after 30 years' service. The ages at which retirement becomes compulsory are as follows:—An inspector-general must retire at 64 years of age; the médecins principaux of the first class, at 60 years of age; médecins principaux of the second class, at 60; médecins majors of the first class retire at 58; médecins majors of the second class, at 56; médecins aide-majors of the first class, at 50; and médecins aide-majors of the second class, at 50 also.

With regard to the recommendation for promotion in the medical department of the French army, the médecin-major in a corps recommends the aide-major, through the colonel, and the colonel of the corps recommends the médecin major. In hospital establishments the initiative for recommending promotion rests principally with the intendants; their recommendations are forwarded to the medical inspectors, who, having written their opinions respecting the merits of the candidates, forward the documents respecting the medical officers of corps to the military inspector general of the army, and those in hospital establishments to the intendant military inspectors. These again forward them with their opinions to the Minister-at-War, who lays the same before a commission composed of one general of division, three medical inspectors and two military intendants, the general being president; and the commission having decided, forward the same to the Minister-at-War, who decides and selects out of the various candidates.

The inspectors-general form a council of health, the senior being the president, under the Minister-

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at-War, and they give their opinions (when asked) upon all matters relating to sanitary measures to the Minister-at-War; they however do not take the initiative; they also carry on the correspondence with the medical officers of the army. The inspectors make annual inspections (each having a particular district), according to published instructions which are minutely laid down; they also make annual reports to the Minister-at-War of their inspections, and a copy of the same is sent to the council of health. The other medical officers only report every three months unless an epidemic or sickness breaks out, in which case they may have to report daily. The inspectors are the only administrative officers, all the other ranks being considered executive. Those of the higher grade are in charge of divisions in hospitals, and are accompanied by younger officers who take down their orders regarding the treatment of the patients, diets, &c. No register is kept of the cases, none being asked for by the Government. Statistical reports twice a year are made up, at certain periods; but they are not sent in until a month after being due; no report is published, by authority, of the collected facts, although it was laid down in the regulations of 1851 that such should be done. I should state that a card is attached to each bed with the name of the patient, the disease, the diet, the treatment, &c., and a tabulated form showing in one line the history of the case, is kept for the purpose of reference, with very little writing; at Val de Grâce there is a register kept of the post-mortem examinations. When the medical officers first enter the service they are generally appointed to a regiment. Aide majors of the first class are appointed to hospitals in the proportion of two thirds by seniority, and one third by selection. The remainder of the aide-majors of the first class and the seniors of the second class, are appointed to corps, and the remainder of the second class are appointed to hospitals. An examination takes place before an aide-major of the first class is promoted to médecin-major of the second class, and by concours from médecin-major of the first class for the appointment to hospitals, as the latter appointments are much preferred.

Medical officers are not consulted regarding the construction, space, and ventilation of barracks or hospitals. The site is selected by the intendant, as also the space allowed. This officer knows nothing of hygiene, yet he decides on all matters connected with the health of the troops, the food, the space allowed in the hospitals, and the barracks. Certain articles are laid down in the diet tables, which are so arranged in portions that the medical prescribing officer has the power of substituting one portion of one article in lieu of another according to the circumstances of the case. Fowls are not named in their diet-tables, and they can only be given with the sanction of the intendant. If he refuses the matter can be forwarded to the Minister-at-War for his decision. The intendant supplies everything for the hospitals. The intendant-general in Paris supplies everything; and contracts are entered into by him for the supply of food, bedding, clothing, fuel, hospital furniture, &c. The engineer only supplies the walls. Medicines are supplied by the pharmacie centrale. In every hospital there is an accountant or comptable, who keeps all the accounts. These comptables rise from the ranks; they commence as assistant-pupils, passing through the different grades of pupils, and adjutants, they become comptables; and for every step they have to undergo an examination. There are also orderlies or infirmiers of four grades in the hospital: serjeant, corporal, 1st soldier, and soldier. An orderly is generally in charge of from 10 to 12 men, and an infirmier major is placed over a division which may consist of two or three large wards. There are also one head cook, and so many assistants in each hospital, according to the size. In all military hospitals, however small, a person called a pharmacien is appointed, whose duty it is to make up the medicines, and in large hospitals there are several pharmaciens of different grades. In Val-de-Grâce there are 40 sisters, or female nurses, one sister in chief being over them all. The sisters cannot order the orderlies, but they can complain to the infirmier major if anything is wrong with regard to the orderlies. The particular duties of those sisters are, to give medicine and food at certain hours, to attend to all the wants of the sick, and change the linen, &c. There are three sisters in each division, which may comprise two or three wards. The salary of the sister is said to be 400 francs a year. The sisters are said to have a very good effect in the wards, and all speak very highly of them with respect to their usefulness, kindness, and attention to the sick.

With regard to the hospitals, there are, properly speaking, no regimental hospitals in the French army, although a room is generally set apart in each barrack for very slight cases and a few medicines are kept, but all the sick or serious cases are sent off at once to the military hospitals. In the barrack Napoleon, a small room, about 21 feet long, by 19 feet broad, having 11 beds in it, very close to each other, was used as the infirmerie. On entering a hospital everything is taken from the soldier and put aside in a room, and an inventory of the same is made out. Hospital dresses are provided for the patients, consisting of long grey cloth coat and trousers, socks, drawers, and shirts; clean shirts and socks are supplied every week, and sheets every fourteen days, or oftener if necessary; knives and forks are also provided, together with plate, spoon, cup, horns, basin and jug, all of pewter, and a glass tumbler. There is also a small table to each bed, which contains a crockery chamber pot, and the table is so formed as to be used also as a chair. There are curtains to the windows. The bedsteads are of iron, and attached to the head and foot of the same are shelves of wood, four inches broad, for holding articles. On the bedstead there are two mattresses, one of straw and the other flock, a pillow, clean white sheets, and white blankets. While in hospital the soldier receives no pay.

We visited some of the wards at Val de Grâce, in what is called the new building, which new building consists of two wings, one on each side, forming with the old building three sides of a square. These are two stories high, with attics. You enter in the centre of the building, and on each side are two wards on the ground floor, holding 50 patients each, namely, 18 down each side, and two other rows running lengthways up the room of seven each. The ward is about 138 feet long, 51 feet broad, and 14 feet high, equal to about 1,970 cubic feet of air to each patient. There are nine windows on each side. The distance of the beds from each other from edge to edge being 45 inches, the nearest being 34 inches; from centre to centre of bed, 7 feet; and at the ends there is a space of 30 feet between the feet of the beds of the two side rows. There are two stoves, height 5 feet 3 inches, with brass pipe, for heating the ward, small fountain with two pipes, and a basin attached at one end of each. A small lamp is suspended from the ceiling for the purpose of lighting the room. There are no curtains to the beds. At the farthest end was one small room for one patient, and also a small scullery. All the patients dine in the wards. Half way up stairs to the next flat were some privies in the Turkish style, but as there was no supply of water, the effluvia was very offensive from them. We were informed that some pails of water were thrown down them daily. The upper wards corresponded exactly with the one I have just described; so that on each floor there were 102, making 204 on two floors, and, when the attics were occupied with patients, there would be under one roof 306 sick. There was no ventilation except by the doors and windows, the latter opening in the centre. The floors of the wards were oak, waxed clean, and the walls were coloured. The stairs and landings were of wood. We also visited another ward in the old part of the building. The effluvia, in ascending the stairs to the ward, was

dreadful. The ward was about 145 feet long by 42 feet broad, and 10 feet high. It contained 52 sick; 16 on one side, 13 on the other, and two centre rows, lengthways, one being 11, and the other 12; the cubic space to each patient being 1,170 feet. There were 13 windows on one side, and 14 on the opposite side. There was a distance of six feet between some of the beds, and nine feet between the others, along the sides. The furniture, beds, and bedding were the same as in the other ward. There was no place adjoining either of the wards for lavatory purposes; and the ventilation was by the doors and windows only. Hanging from the roof to the centre of each bed, along the sides, were ropes for the patient raising himself by. This hospital has 1,400 beds, but at present there are only 1,000 sick in it. We were informed that no erysipelas or any epidemic had occurred in it. There had been cases of cholera, but the patients were first brought to it, and it did not then extend to the other wards. There is also a classification of the patients. Smallpox and fever cases are kept in separate wards. Attached to the hospital were 24 metal baths for the men, hot and cold; and also some wooden ones for medicated baths; and five baths detached with curtains for officers. In the kitchen there is a good range, and they can boil, roast, and bake.

We also visited the new hospital at Vincennes, which is not yet finished. It forms three sides of a square, the front being occupied with the chapel, receiving room, offices, &c. The two sides are three stories high, with attics, and are divided into wards, containing 40, 24, 12, 4, and 2 beds, and when finished it will hold 480 patients, and with the attics or fourth story, 600 altogether. There are apartments for non-commissioned officers and officers in the vestibule. In the centre of each wing or vestibule are some privies in the Turkish style, on each side, for the patients; also a room for the sisters, and a small kitchen: there is also a stair, but no lavatory apparatus. A ward for 24 patients was about 138 feet long, 25 feet broad, and 13 feet high, giving 1,950 cubic feet, and there are ten windows on each side. The ventilation which is about to be carried out is by extracting the foul air by two openings between each bed, the lower one four inches from the floor, being eight and a half inches by 11, and there is another one about the middle height of the wall. The air descends by shafts, which lead into a large tunnel of brick in the lower part of the building, which runs towards the centre of each wing, whence a direct shaft communicates with the external air above the roof of the building. A stove is placed at the lower part of the upright shaft, and when heated it is supposed the foul air will be extracted from the two tunnels and by the other tubes between the beds from all the wards. Fresh air is drawn in by apertures close to the ground. Two stoves are placed close to these apertures, and when they are heated they create a draught, which is conveyed between the two walls into a tube 23 inches by 12, which runs through the centre of the wards, and the air distributed through so many shafts, according to the size of the ward. There are 18 extractors of foul air for 40 beds, and 12 apertures for the introduction of fresh air. In winter the wards will be heated by hot-water pipes running along the floor of the wards, and entering the shafts, as in Lariboisière. It is supposed that 1,800 cubic feet of air per hour will be introduced for each bed, and that the same quantity will pass out; the section of introduction being twice the section of extraction; but the windows will have to be kept shut, as it will interfere with the ventilation were they opened. The above is very beautiful in theory, but whether it will work practically or effectually is quite another thing. All the stairs and landings in this new hospital will be of wood. There is a corridor all round on the ground floor, 12 feet broad as far as the vestibule in the centre of each wing, and above this is a promenade for the patients not covered in, but there are places for them to sit down upon. Doors communicate all through from one end to the other, the whole length of each wing.

We also visited the military hospital at Brussels, which is conducted on the same principles, under intendants and infirmiers. The diets are the same, and hospital dresses also are issued; there is one sister, as nurse to each ward. The building is old, and there is a corridor all round the square. We visited one ward on the ground floor for 22 patients, 12 on one side and 10 on the other. This ward was 84 feet long, 27 feet broad, and 19 feet high—about 1,954 cubic feet to each patient. There was a space of 2 feet 8 inches between each bed, 12 feet between the ends of the beds, and 6 feet 8 inches from centre to centre of the beds. There were eight windows on one side, and two end ones, and four places close to the ceiling for ventilation, leading by a shaft to the top of the building. One window was open; and we were informed, that in the summer, when the temperature of the external air is nearly the same as the internal, the ventilation did not act well. There was no hospital smell whatever; in fact it was the sweetest ward that we have yet seen. There was a table and chair for each bed, and two mattresses, the lower one of straw, and the top one of flock. The bedding was very clean—nothing could look nicer. The floor was of oak, which was kept well waxed. There is one shelf at the head of the bed about four inches broad for articles standing. The patients dine in the wards, which are heated in the winter by stoves in the centre of the ward fed by charcoal, with a pipe leading to the chimney. There is one small ward at the end for one patient. Glass tumblers are used for administering the medicine, and the utensils are of pewter. There is a press in the ward, also in the small ward, for dressing articles, &c., and two small fountains for the patients drinking water from with cocks. There are no places for lavatory purposes or water closets adjoining, the latter being at some distance, and seated; the effluvia from them was very bad, there being no water supply to them. One sister has the charge of each ward. We also visited another ward, one on the top flat for 30 sick, 16 on one side and 14 on the other. The windows, which were small and on one side, were all shut. There were three round open places in the roof for heated or foul air to escape, and also two places for the escape of air from the lamps. There were no curtains to the beds, and there were two stoves for heating the ward as below. Everything was very sweet and clean. The hospital has accommodation for 300 sick. There is one orderly for every 15 sick, and one sister-in-chief over all the others. They speak very highly of the female nurses, and of their kindness and attention to the sick, as in Paris. In the kitchen they can boil and roast, and the diets are the same as the French. They breakfast at 10 a.m., and dine at 4 p.m., which they do not consider sufficient. Hospital dresses, consisting of a long blue cloth coat, &c., are furnished to the sick, who receive no pay when in the hospitals, as in France. No registers are kept, but they have the bed card, and the tabulated form, showing in one line the history of the patient, very complete and simple. [*Copies of all returns and diet tables are handed in.*] They have also pharmaciens for medicines, and a small pharmacy, with kitchen attached.

There is only one administrative rank, namely, the inspector-general, who inspects annually. There are six ranks in the medical department, the five inferior being all examined for each step, the examination being competitive, and promotion is by merit alone. If two candidates for promotion are found equal, the preference is given to the senior. Retirement is compulsory for officers ranking with captains at 55 years of age; for superior officers at 63 years of age, and for inspectors-general at 68 years of age.

A recruit enters the French army by conscription at 20, and he has to serve seven years besides the remainder of the year in which he enters. He receives, on entering, 40 francs for his outfit. After deducting

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for rations, he is said to have clear seven sous every five days. The ration consists of 3lbs. of bread every two days, beef 250 grammes every day (500 grammes being equal to 1lb.) He has soup for breakfast and dinner, and a certain allowance of white bread for his soup. Vegetables are purchased at the rate of three francs' worth daily, for about 60 men. The soldier has no coffee, tea, or sugar, but eternally beef and bouilli. When on the march each soldier has half a franc a day, and a pound and a half of bread; but no beef or wine is supplied; they must purchase these out of the half franc. He is on guard in Paris every third or fourth day for 24 hours, two hours on sentry and six off; 24 men constitute the main guard, and they have three posts. The soldier is dressed the same in summer as in winter; the pantaloons serve for one year, and the coat, great coat, and epaulettes three years. The stock is soft, of hair and merino; flannel shirts are ordered to be worn on service, and in Algeria. The boots cost five francs four centimes, and they have a guard-cloak kept for the guard.

The barrack Napoleon is built to accommodate 3,000 men; it is in the form of a square with a corridor all round, twelve feet broad, and the buildings are three stories high. The space on the ground floor is occupied as a guard room, prison, kitchens, canteen, school, stables, &c.; there is in the guard room a bench the same as in England. The privies, which are after the Turkish plan, under the second flat, are very offensive. The urinals are made of wood, and there is no water laid on for the purpose of cleaning them. At the bottom of the stairs are stone troughs fixed for washing, three on each stairway, with 14 cocks, seven on two sides, and five in another place. The stairs are double, one on each side, and they, as well as the landing, are of wood. With regard to the rooms for the soldiers, some hold 24 men, and there is a double room with a wooden railing in the centre, having four rows of beds for 48 men, The former for 24 men is 54 feet long, 19 feet broad and 15 feet high, equal to about 640 cubic feet of space to each man. There are two windows at each end, and three circular ventilators on each side, close to the ceiling. The dimensions of the rooms for 48 men are as follows: 54 feet long, 48 feet broad, and 15 feet high, equal to 810 cubic feet to each man. There are three windows at each end, and three round ventilators under the ceiling. Between the windows are racks for the arms, and there are shelves all round the room above the beds. The bedsteads are made of iron with tressel boards, two mattresses, one of straw and the other of flock, white sheets, and a brown blanket. The beds are very close together, being only nine inches apart, and they are not turned up, the men being allowed to lie down during the day. The soldiers dine in the room. There are eight corporals in each company, the senior of whom is in charge of the room. There are no orders about opening the windows, but they generally open them early in the morning. There is one stove for each room, and 60 kilos of wood are allowed for each stove every two days. The light is bought out of their stoppage for the ration. On the same landing with these rooms there is one room for serjeants, 19 feet long and 12 broad, and another for the serjeant-major and fourrier. There are no married quarters for the soldiers, and those married are chiefly the canteen-keepers, or attached to it. No officers live in barracks, except the adjutant, officers for the week being appointed. The soldiers pay barrack damages. In the kitchen they cook by boilers, and there are cooks specially set apart; they breakfast at 9 a.m., and dine at five p.m. When admitted into the hospital for venereal complaints, they never make up their duties. The prices of the articles that are sold in the canteen are fixed by the captain of the staff, one of whom is attached to each battalion.

We visited also the cavalry barracks; we found the soldiers in rooms for 13 and 14 men, and they stated, that they preferred these to larger ones, as being quieter. The stables are ventilated, but not the barracks; the staircases are of wood, and the landings are tiles.

We also visited the newest barrack in Brussels, which was built of brick, in the form of a square, three stories high. There is an open corridor all round beneath, with a passage above, and rooms leading from it. There are 22 men in each room, 11 on each side. The beds are about nine inches apart; the bedsteads are of iron, and they are supplied with a mattress. Above each bed are two rows of shelves, divided into partitions, and there is a window at one end, and some ventilators. No married soldiers have quarters, except the cantiniers. The canteen consists of two large rooms; there is a kitchen for the sous-officiers, and a table d'hôte; the table was covered with white table cloth, and they all dine together. The corporals dine in the barrack rooms. There are also a library and reading room for the sous-officiers; the latrines are boxed and seated, but there is no supply of water for them, the urinals are in the same place, and very offensive. We visited the guard room, and we found it furnished very much the same as in England. There was a guard bench, and a raised place for the head. We also saw the cells, which are built in a row, for several men, with a guard bench, and there is a boxed privy in the corner of each cell; there is a window in the roof, grated over for the purpose of ventilation, and also in the passage, and openings besides in the wall of the passage. There is no military lunatic asylum, but lunatics are sent to civil establishments, and are kept by the state. There is also no regimental hospital, but they have a room for trifling cases, the same as the French.

I was informed that there was no lunatic military asylum in France, even at Charenton, and should an officer or soldier become insane, he is kept in the hospital under the observation of the medical officer. When lunacy appears to be confirmed, he is transferred to a special division of the lunatic asylum at Charenton, where he may remain until he dies or recovers. In the provinces there is a lunatic asylum in each department, to which the soldiers may be transferred at the recommendation of the medical officers, and at the expense of the government. The asylum at Charenton is supported by old public grants along with present ones, and the money paid by civilians who have been treated in the establishment. The Minister-at-War has a certain number of appointments in his gift, which he can give to soldiers, or any one who has served the government. Every soldier has a claim on that account, but it must be proved that his lunacy was caused by his service; and if he is in possession of a pension, his friends may remove him from Charenton, and he may still retain he pension.

With regard to the civil hospitals, Lariboisière, for 600 patients, is built in the form of a square, 140 feet across, laid out as a garden, and with a water fountain in the centre. There is also a corridor 10 feet broad, covered in and enclosed all round, and having windows. At right angles to the corridor are three central blocks for sick on each side, three stories high, and between each block there is about 75 feet of space. These blocks contain one large ward on each floor for 32 beds, being 132 feet long, 33 feet broad; the lower one is 17 feet 6 inches high, the middle ward is 16 feet 8 inches high, and the top or third ward is 16 feet 4 inches high, making 2,382 cubic feet for each bed in the lower ward, and somewhat less in the upper ones. There are eight windows on each side, which are always kept shut, and two beds between each window, two feet between each bed. In the male wards, the distance from the centre of one bed to the centre of the other is 5 feet 4 inches; the space between each window is 9 feet, and between every two beds in the floor is an opening of about 10 inches square, and there is another of the same size between the beds, about 8 feet high, none higher. These openings are for the exit of foul air, which is conveyed by tubes to the top of the building. Down the centre of the

wards are four oval shafts with gratings at the top for the access of fresh air, which is driven in by machinery. There is a steam engine of several horse power, which drives a fan and forces the air through a large iron tube, from whence smaller ones pass off, run along the floor in the centre of the ward, and air passes through the grated openings in the four central shafts. This air is supposed to pass over the bed and eventually to escape through the openings between the beds. Heated vapour is also conveyed by tubes under the floor, which pass into the central shafts and the air being heated escapes into the ward during winter. The machine goes night and day and is supposed to throw in 36,000 cubic metres of fresh air per hour through the nine wards. The machinery for ventilation cost 24,000 francs. There are curtains to the windows, and also to the beds. It was stated to us that the patients could not do without curtains to their beds, on account of the draughts. We found the wards clean, the flooring of oak, well waxed, and the walls and roof of Parian cement, variegated like marble, which looks well. There is a table and chair for each bed, and a glass tumbler for the medicine. There were tables down the centre of the wards. The bed-linen was clean, the bedsteads were of iron, and the utensils of pewter. Although everything was exceedingly clean, there was a very close smell in the ward. At the furthest extremity there was a small ward for two patients, and a place for dirty linen. On the opposite side to it there is a privy, after the Turkish fashion, but there is no water supply for it, and it was very offensive. The pan is of crockery. Of course there are no fire places. The top wards are exactly similar, save that on each landing there is a small kitchen for hot water, &c. The stairs and the landing are of wood; on each block there are beds for 102 sick. On both sides of the building there is a room for the convalescents, male and female, to dine in, provided with glass tumblers and decanters, and the table was covered with oilcloth. There are no lavatories adjoining the wards; there are two male attendants and one female nurse for each male ward, and two females and one man for each female ward. There is one male for each male ward, and one female for each female ward, during the night. On the opposite side there are three blocks for the female wards which are of the same length, breadth and height, and are supplied with the same beds, furniture, &c., as the men's wards. There are four round shafts down the centre of the wards grated above, and heated by hot water, for the purpose of causing the air to pass in through the openings on the sides of the buildings. Between each bed there is a place for the exit of the foul air, which ascends through a shaft to the top of the building, the extraction being produced by a hot water cistern at the top, surrounding the extracting shaft, which causes the foul air to ascend. There is also a small opening between each bed close to the ceiling, which, when we visited the hospital was shut, the windows were open and in other respects the wards were much the same as those on the opposite side. The fire and boiler were below for heating the water. The central shaft for the exit of foul air to which the others lead is heated by hot water. We visited both the male and female wards on the 2d of June, about a quarter past 10 a.m., and we found that the female wards had a less hospital atmosphere, and were sweeter than the men's with the machinery at work. However, the door in the female ward was slightly open, and there were three beds unoccupied. In the men's ward the hospital atmosphere was stronger than that of the females. The air passing was scarcely perceptible. It affected the lamp slightly, but it had but little effect in moving a small piece of paper. We found the laundry very good, and the clean linen store well arranged.

In La Charité hospital, for 500 patients, the stairs and landings were of wood. We visited a ward for 120 patients, heated by five stoves; it was 390 feet long, 33 feet broad, 9 feet between the ends of the beds, 3 feet between each bed. The smell was most offensive. There was no ventilation save by the doors and windows. The beds were curtained. There was a table and chair for each bed, and the utensils were of pewter. The patients dine in the wards. There is a small fountain in the ward, but no lavatory adjoining the ward. There are five sisters attached to the ward as female nurses, and five men for attending on the 120 sick.

The hospital of Beaujon is small, having been originally an old mansion. Four pavilions or blocks, separated from each other by about 75 feet; each pavilion is three stories high, and there is a ward on each floor for 18 beds, nine on each side, and two beds between each window on each side. The ward is 63 feet long, 33 feet broad, and 13 feet high, equal to 1,500 cubic feet per bed. There are three feet between each bed, and 18 feet between the ends of the beds. The patients dine in the wards. There is one privy at one end, seated, offensive. One pavilion is ventilated by an archimedean screw of a half-horse power. The air is drawn down a shaft from some height by a fan and driven and distributed through the wards by one tube for each floor of the building, narrowing as it ascends. The exits for foul air are two openings, one on the floor and the other about the middle height in each corner of the ward, which foul air ascends by shafts to the top of the building. This plan is stated to work well, but when we visited the hospital it was not in operation. The other three pavilions, depending only on the doors and windows for ventilation, were not nearly so sweet, but offensive. There is also a small ward at the end for two sick, as at Lariboisière.

In the Hôtel Dieu they have accommodation for 900 patients. The ward that we visited was for 80 patients, 270 feet long, 45 feet broad, and the roof arched. There is a row of patients down the sides, and a row of beds lengthways up the ward, with a space of three feet between each bed. There are curtains to the beds, and the windows are small and jalousied outside. There is no ventilation, save by the doors and windows, and there was a close hospital atmosphere. They have wards for 12 and 34 beds on four flats or stories. At the hospital St. Antoine they have room for 350 beds, in wards for 22, 35, and 40 beds. We visited one for 22, 11 on each side; the ward was 78 feet long, 21 feet broad, and 16 feet high, and there was no ventilation save by the doors and windows, and by one pane of glass. There were six windows on one side, and none on the opposite; the ward is heated by two stoves. The patients dine in the wards, and one sister and two male orderlies are attached to each male ward. The water-closet is after the Turkish mode, and close to the ward; there was no water supply, and the effluvia was fearful. There is one head sister over 30 sick, and one orderly, male or female, for every 10 sick, either males or females. There is one sister over the kitchen, and also one over the washing establishment.

The hospital of St. Louis is two stories high, and is constructed for 900 beds. We visited a female ward containing 84 beds, six feet six inches from centre to centre of each bed, and three feet between each bed. There are seven windows on each side; the beds, which are curtained, are between the windows. There is no ventilation, save by the doors and windows, which were open when we visited it. The ward was sweet. Its dimensions were 195 feet long, 27 feet broad, and 24 feet high, equal to about 1,500 cubic feet per bed. There is one sister over each ward. The windows are very high, with a small one above. There are two Turkish waterclosets adjoining the female ward; but as there is no supply of water, they were very offensive. There is a small kitchen, also, for hot water, &c. The ward for the men was low, containing 72 patients. The roof is arched and low. There is a small table and chair between each bed, and no curtains. There was a very close hospital atmosphere, and the windows are on each side.

All the civil hospitals which I have mentioned are under the superintendence of a director, who was supreme in the hospital, the medical officers only

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attending to the treatment of the sick. The returns are simple, and there is little or no writing by the prescribing officer; whatever he orders is carried out. The diets are laid down as in the military hospitals, and portions of one article are given in lieu of another, at the option of the prescribing officer. The wards generally are clean, the floors of oak, and well waxed, and generally speaking there are curtains to the beds. The stairs and landings are of wood. The kitchens are good, and adapted for roasting, baking, &c., and are generally under a sister, as well as the washing and laundry establishments; They have generally a good supply of baths of all kinds, both hot, cold, medicated, fumigating, and also vapour. There is also a kitchen attached to the pharmacy for ptisan and other drinks. The system of female nursing is carried out in all under the superintendence of sisters, and the nurses are highly prized for their kindness and attention to the sick. It is stated by all that no erysipelas or any epidemic diseases show themselves in the hospital, unless when in the neighbourhood. The wards are generally speaking too large. There are no fire-places and no waterclosets adjoining the wards, and lavatories are very deficient. Nothing can be worse than the privies. Curtains to the beds are objectionable, as preventing the current of fresh air through the wards.

In the civil hospital of St. Jean, at Brussels, they have accommodation for 384 sick. There are four blocks running at right angles (not so lofty as at Lariboisière), two stories high. The wards contain 24 patients, 12 on each side, and five windows on each side, all shut, two beds between each window. The ward is 102 feet long, 27 feet broad, and 16 feet high, being about 1,836 cubic feet to each patient. There are two square places grated at each end in the corners, about three feet high from the floor, for fresh air, and one also at the door. There are three ventilators under the ceiling on each side for the exit of foul air. The hospital atmosphere was very strong. There are curtains to the beds, and a chair and a table to each bed. There is one privy at the end of the ward, having two seats, boxed, two windows, ventilated at the top, together with a water-pipe and sink. The blocks of building are not sufficiently far apart. Each block contains 48 patients under one roof, and four such buildings on one side make 192 sick; on the opposite side the same, being a total of 384 sick. There are male and female wards in the hospital, and the medical and surgical cases are classified. The hospital is under a director, as in Paris; and the dieting is also the same as in Paris. Female nursing is also highly spoken of.

In the hospital of St. Pierre there is one ward on the ground floor, a new building, capable of containing 16 beds, eight on each side, 74 feet long, 27 feet broad, and 16 feet high,—equal to 1,998 cubic feet for each patient. The bedsteads are of iron. There are three windows on the outside, and two on the opposite side, looking into the corridor, with three ventilators on each side under the ceiling. There is a place fixed on the head of the bed for articles for the patient, but there are no curtains to the beds. No external air is admitted, save by the doors and windows. And there are baths for male and female patients in a house adjoining; but there are no lavatories adjoining the wards. There are sisters both for the male and female wards. The floors were very clean, and well waxed.

All the hospitals, both in Paris and Brussels, are well supplied with all kinds of baths, but they are very deficient in lavatory places adjoining the wards, and nothing can be worse than the water-closets; in fact they were all exceedingly offensive. All the hospital authorities state, that no erysipelas or epidemic diseases originate in the hospitals, and the female nurses are highly spoken of; the kitchen, washing, and laundry establishments are very good. The French wards are, generally speaking, in my opinion, too large. Among such a number of sick one or two patients may disturb the whole ward; and having no fire-places they would not suit English tastes, being so cheerless. Curtains to the beds I do not approve of, as they interfere in a great measure with the current of fresh air in the wards. Lavatories adjoining the wards are very deficient, and nothing can be worse than the water-closets or privies; they being in the Turkish style, with no water supply, and being untrapped, the effluvia from them is very bad and offensive.

The ventilation may be considered as very deficient in the different hospitals, many of them having no ventilating appliance or means, save by doors and windows, which being under the control of the patients and shut at night, in bad weather and in winter, the wards must be offensive. On our visit to them, many windows being open, the weather being then fine, no doubt we saw them to much advantage; and were it not for the large amount of cubic space allowed, the wards would be far from pleasant. The artificial ventilation carried out by machinery at Lariboisière, as well as by the heating apparatus in the female wards of the same hospital, and which is about to be carried out at Vincennes, is extremely ingenious; but all those artificial means are not only expensive, but apt to become deranged; besides the great disadvantage of not being enabled to open your windows when the system is at work, without deranging the process, and also, as it is supposed, open fire-places would interfere with the same; these are great objections, in my opinion, to the same being introduced to our hospital establishments in this country; more particularly, as I am decidedly of opinion, that wards can be thoroughly and completely ventilated by introducing fresh air by perforated zinc openings into the wards; these communicating on one side directly with the external atmosphere, and on the other with the passages or lobbies, which again would derive their supply from the external air by openings externally, and by louvred panes of glass; these being the means for the introduction of fresh air, assisted in good weather by judicious openings of doors and windows, and with sufficient openings in the roof or ceiling for the exit of foul air, these ventilators being connected by tubes or shafts, and carried up either into the chimney or alongside of it to the top of the building. I feel convinced that were the above plan judiciously carried out in all our hospitals and barracks, the openings for the entrance of fresh air, and the exit of foul air being adapted according to the size of the wards or rooms, with a larger amount of space for each patient, say from 1,200 to 1,500 cubic feet to each patient in hospital, the ventilation would be complete, and at all times we should have in our wards a sweet and fresh atmosphere, besides the great advantage of having fire-places, which add so much to the comfort of the patients. The air through the lobbies could be heated also in winter, which would be a great advantage.

The plans of blocks of buildings detached, as at Lariboisière and at Beaujon, as well as at St. Jean, at Brussels, are good, provided a greater amount of space be given between each block of buildings, the present being far from sufficient. By the above method you can carry out your hospital establishments to any extent. Each block being detached, you have also the advantage of windows on each side, which can be opened, thereby thoroughly ventilating your wards when necessary; very different from the long, narrow, and badly-lighted wards in the Portsmouth hospitals, having only windows at each end. I may add that I have seen no hospitals, either in Brussels or in Paris, that can be compared on the whole to the Melville Hospital at Chatham, as regards cleanliness, lavatory, and watercloset conveniences, &c.

From what we saw and heard of the female nursing in Paris and Brussels, there cannot be a doubt that good results would follow the introduction of a certain number of well-selected educated nurses to our hospital establishments. In Jamaica, in 1837, I recommended female nursing to be employed from what I saw of the evil effects, and even risk of life, by orderly or soldier nursing in serious cases, but no attention was paid then to my recommendation; and from my more extended experience, I am still more

convinced of the advantages that would be derived from the judicious introduction of female nursing into our permanent hospital establishments.

4588. What is the bedding in our military hospitals? —Generally a hair mattress; they were at one time of straw.

4589. Only one mattress?—Yes.

4590. They had at one time a straw mattress?—Yes, a straw mattress below and a flock one above in Paris and Brussels.

4591. Is that as good as a hair mattress;—I dare say it is softer, but I should prefer the hair mattress as being cooler.

4592. In a good many of our hospitals I believe they only have straw?—Yes, they had.

4593. (*Mr. A. S. Stafford.*) Do the beds have wooden laths or ticking in those hospitals?—The bedsteads were of iron.

4594. (*President.*) Are waxed floors capable of being easily washed?—They wash them occasionally to take off the superabundant wax.

4595. You say that there is an examination for promotion to every rank?—Yes; that is in the Belgian army.

4596. Did you ascertain how that examination was conducted?—They said that it was by competition.

4597. Do they trust to a man who passes a first examination without reference to reports about him as to zeal?—They said so.

4598. Do you not suppose that they make some allowance for that?—I do not know.

4599. You stated that you were an advocate for openings to let in the external air to ventilate buildings, not trusting alone to windows?—Yes, if the windows are shut at night you would not have any air in at all, unless other means were adopted.

4600. You think that there might be some artificial ventilation?—I would not trust to artificial ventilation by machinery or by heated air; I am of opinion that the air coming in directly through gratings is the best, otherwise when your wards are shut at night you will have no air coming in. There should also be the means of escape for foul air through the ceiling, and were shafts carried up to the top of the building, there would be no draught, yet a certain amount of ventilation continually going on.

4601. You also stated that you saw nothing better or equal to Melville Hospital at Chatham?—Yes, no hospital surpassed it.

4602. Do you agree with the statement made by Dr. Mapleton, that it is very bad for a patient to be placed with his bed opposite the light?—Some patients object to it, but you could check that by curtains. I think it is a good thing to have a good quantity of light, and then you could ventilate by opening the windows, not necessarily those opposite to each other. By having windows only on one side, you may be deterred by the weather from opening them at times.

4603. If having windows opposite to the beds is bad, is not that condemnatory of Melville hospital?—Yes, and of one half of the hospitals in Paris. Melville hospital is a very clean hospital, and there are good waterclosets adjoining the wards. It is partially ventilated. It is as clean as any hospital that we saw. The waterclosets are very superior to any either in Paris or Brussels.

4604. You do not object to the light opposite to the patient?—Not with curtains.

4605. Is it not true that you can always darken a wall, but by no artificial means can you lighten it?—Yes, by curtains, &c., and there is another advantage by having windows on both sides, that if you wish to open them, supposing there is a storm, you can open those on the opposite side to that from whence the storm is blowing.

4606. (*Mr. J. R. Martin.*) You would not say that Melville hospital at Chatham is a pattern for hospitals?—No, but I consider that it is a well-arranged and a well-conducted hospital, still it is not ventilated sufficiently at present. I merely mentioned it because it is as good, and much better in many respects, than any we saw.

4607. (*Sir J. Clark.*) Do you not think that curtains in hospitals are bad?—No; to the window they may be necessary to screen the light from the patients.

4608. I mean to the beds?—Yes; I think that curtains to beds prevent a free current of air passing over the patients.

4609. If the ventilation could be made perfect, would it not be better for the patients not to be opposite the windows?—Yes, you might place them between the windows as they do at Paris.

4610. (*Mr. J. R. Martin.*) It is only during a very few weeks in the year that the light could be offensive?—Yes; only for a short period, and then you could check it by curtains if necessary, or by venetian or sun-blinds.

4611. (*Sir J. Clark.*) The report as to the female nurses in Paris was universally good, was it not?—Yes, and they said they had a very good effect in the wards; all spoke in high terms of them.

4612. Are they all connected with some religious establishment?—Yes, of the order of St. Augustin; head-quarters Hôtel Dieu in Paris.

4613. How is the dirty work done in the hospitals? It is done by the orderlies; the nurses merely attend to the nursing and the giving of medicine; then they have a sister over the kitchen who issues out the food, and sees that the diets are properly cooked; and another over the washing and other establishments.

Serjeant Henry Russell examined.

Serjeant Henry Russell.

4614. (*President.*) You are in the Grenadier Guards?—Yes.

4615. How long have you been in the service?—21 years and six months.

4616. Did you serve in the Crimea?—Yes.

4617. What are you?—Colour-serjeant.

4618. What length of time were you in the Crimea?—I embarked with the troops in February 1854. I left the Crimea after the battle of the Alma.

4619. You are regimental store-keeper, are you not?—Yes.

4620. Were you ever a pay serjeant?—Yes; I paid a company for nine years.

4621. Do you recollect the change that was made with regard to the messing, when the supply was made through the commissariat?—Yes.

4622. Previously to that it had been done by regimental contracts in the Guards?—Yes.

4623. Was it ever much objected to in the regiment at the time that the change took place?—I never heard of it.

4624. Has it worked satisfactorily?—I believe so; and that it has given every satisfaction.

4625. Do you get as good meat as you did under the regimental contracts?—Yes; I have not heard of any complaints.

4626. Do you think it will be possible to extend the system of supply by the commissariat from the bread and meat to the vegetables and coffee, and so on, giving the man his breakfast and dinner, and a third meal as well?—Yes; I think it would be beneficial to the soldier.

4627. What is the stoppage for messing in the Guards?—I am not a pay serjeant now; but I saw a pay serjeant yesterday evening, and I asked him about the different prices, and the charges for messing, and I think it is 4*s.* 7*d.* a week that they are under stoppages for; they pay 2*s.* 7$\frac{1}{2}$*d.* for the bread and meat, and the vegetable money is 1*s.* 0$\frac{1}{2}$*d.*, that is, for potatoes and the herbs that they put in their soup, and for their coffee and tea 5$\frac{3}{3}\frac{3}{2}$*d.*, and then for seven days bread, that is half a pound of bread for the

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evening meal, they pay $5\frac{2}{12}d.$; that makes it $11d.$ for the bread with the tea and coffee. The total amount of the stoppages for the rations is $4s.$ $7d.$; $6d.$ for washing, that makes $5s.$ $1d.$, and $3s.$ $1d.$ the pay.

4628. Your washing is higher than in other regiments?—I believe it is; but we have drawers washed, it is $6d.$ a week. The regiments of the line I believe do not wear drawers, we do, and of course that makes a difference.

4629. Do you wear a flannel waistcoat?—Yes, an under flannel vest.

4630. Do the men wear it?—Only those who choose.

4631. They can have it as a necessary if they like, can they not?—Yes.

4632. (*Mr. J. R. Martin.*) Do the men choose to wear it?—Yes.

4633. Do a majority of them choose to wear it?—No, not quite a majority.

4634. (*President.*) The surgeon can order it if a man's health requires it?—Yes; during the time of the war in the Crimea there was an order then that if a man did not choose to take the long flannel shirt, he was to be furnished with two cotton shirts, and two new flannel vests.

4635. Which do you like the best, a cotton shirt with an under vest, or a flannel shirt?—I prefer a cotton shirt with a flannel vest.

4636. For what reason?—The first thing is the washing; a man that is out in the field, if he has to go down to a brook, or into a dyke, or into a ditch to wash his shirt, the flannel requires very careful washing; and another thing is, that it never looks so well as a cotton shirt, and a cotton shirt is easier to wash, and I know that the soldiers would rather have a cotton shirt, and an under flannel vest, than a long flannel shirt.

4637. They are warmer, are they not?—No; I think they are about equal; I know that cotton shirts and under flannel vests will last the soldier a much longer time.

4638. (*Sir H. K. Storks.*) Is a flannel vest and two cotton shirts cheaper than a long flannel shirt?—A man must have two flannel shirts, they are not quite so cheap as the flannel shirts.

4639. Then he must have two flannel vests?—Yes.

4640. Which is the cheapest, the two flannel shirts or the others?—The two flannel shirts are the cheapest in buying them, but they do not last so long, and the others are the cheapest in the end.

4641. (*President.*) In the line the men do not wear any flannel vest underneath?—I do not think they do.

4642. Who manages the messing in the Grenadiers, who makes the purchases?—The pay serjeant; the company choose their own tradesmen, who shall serve them vegetables and coffee; the pay serjeant makes a weekly contract with these tradesmen to supply them, and if the tradesman does not bring the supply into the barracks, it is fetched in by a fatigue party from the company.

4643. What is the check that you have upon the pay-serjeant as to his making the contract properly, and getting you the best things for the money?—The company have their check themselves; the company is at liberty to change the tradesman at any time they choose.

4644. Could they change the pay-serjeant too?—No. The company, if they feel dissatisfied with a tradesman, merely name it to the pay-serjeant at the end of the week, and they say they wish to go to somebody else, and then they name who they wish to serve them.

4645. What is the advantage to the pay-serjeant; what does he get for taking all this trouble?—He has no advantage, only what the captain of the company allows him for paying the company, that being part of his duty.

4646. (*Mr. A. S. Stafford.*) They cannot gain any indirect advantages by dealing with these tradesmen?—No.

4647. (*President.*) They do not get a bonus from the tradesman in the shape of an additional piece of meat for himself?—No; the tradesman furnishes the troops at the lowest possible price, so that he could not do it.

4648. (*Mr. A. S. Stafford.*) Have you never known a case in which such an accusation was brought against a pay-serjeant?—No.

4649. (*President.*) He has not the option of choosing the tradesman?—No; the company choose their own tradesman, and they change him at any time they like. They would name it to the pay-serjeant on the Saturday, and say we do not wish to deal with this man any longer, but to employ another tradesman, and on the Monday the company lets him know what tradesman they have selected to serve them, and then the pay-serjeant goes and makes a contract with the tradesman to serve them for a week, and then if he does not serve them well they are at liberty to break the contract off at once.

4650. (*Mr. A. S. Stafford.*) Is it the same in the other regiments of the Guards?—I do not know, but I think it is something the same.

4651. (*President.*) So that the pay-serjeant has no discretion as to whom he would employ?—Not any.

4652. Do you think that if a change was made and all was supplied by the commissariat as the ration is, with one stoppage, that stoppage of course being always the same, there would be any dissatisfaction at the change?—No; I think not. I think the soldier would see through it, and that it was to his advantage. For instance, when the price in the market is high, he can only lay out a small sum, and he does not get the quantity that he would get, if it was served by the commissariat store.

4653. In times of very high prices the government would bear the loss?—Yes; and if the market was rather low they would get it back again.

4654. In the Guards it would operate with advantage, because you are always quartered in a high priced district?—Yes; but I have known things got cheaper in London than in the country.

4655. (*Mr. A. S. Stafford.*) Does it not cost you less in London than at Chichester?—No; I think not.

4656. Do you think things are cheaper at Chichester?—I think Chichester is a little cheaper as to vegetables.

4657. (*President.*) What do you say of Winchester?—We found Winchester very dear.

4658. And Windsor?—Windsor is about the same as London.

4659. (*Mr. A. S. Stafford.*) Chichester is the cheapest quarters of the Guards?—Yes, rather.

4660. How did you find it in Dublin?—I was never there.

4661. (*President.*) What do the men take for their meals; say for their breakfast?—They get something more than a pint of coffee, a basin of coffee and half a pound of bread.

4662. Any butter?—That is left to their own discretion; if they like to buy butter or bacon, they go to the canteen, and if not they take the bread and coffee.

4663. (*Dr. A. Smith.*) Do they generally try to get something in addition to the bread and coffee?—Yes, almost every man goes to the canteen and gets a small portion either of butter or bacon.

4664. (*President.*) For dinner he gets his meat and bread?—Yes, half a pound of bread and his meat and vegetables—potatoes.

4665. Of what does his third meal consist?—It consists of half a pound of bread and a basin of tea.

4666. That half pound of bread he buys himself?—Yes; that is his tea and coffee bread, for which he pays $5\frac{2}{12}d.$ for the week.

4667. What else does he get?—At the third meal he either has tea or coffee as he chooses.

4668. (*Dr. A. Smith.*) Does he try to get anything else with it?—I daresay most of them do; I have seen them generally go to the canteen and get a pennyworth or a halfpennyworth of butter.

4669. (*President.*) Do you think that the ration of three-quarters of a pound of meat is enough for a man?—It is enough for some men, but others could eat more.

4670. Three-quarters of a pound of meat with bone when it is cooked comes down to about half a pound?—Yes.

4671. They eat more meat in the day, as they generally get bacon or something else in the morning?—Yes.

4672. At what o'clock do the men breakfast?—At seven in the summer and half-past seven in the winter.

4673. When do they dine?—At half-past 12.

4674. And at what hour do they take their third meal?—At about four in the winter and five in the summer.

4675. Therefore what the commissariat would have to supply would be something more than coffee and bread for breakfast?—Yes.

4676. Or would you confine it to that which you now get by messing, which is only coffee and bread, the bacon being bought at the canteen?—Yes.

4677. The messing does not supply that?—No.

4678. (*Sir H. K. Storks.*) But the messing supplies sugar?—Yes.

4679. (*President.*) Do they take milk in the coffee?—Yes.

4680. Is that supplied by the messing?—Yes, that is paid out of it; there is a regular company's vegetable book, and each tradesman enters the articles that he furnishes to the company in this book, and the bills are paid every week; the top part is for grocery, and the second part is for milk, and the third part is for vegetables; there are three tradesmen who furnish the company with those articles.

4681. (*Sir H. K. Storks.*) You do not send the men outside to buy those things?—That is left to the company. If some of the men of the company would rather go out to a shop and fetch in the things they do so, and if they make an arrangement with a tradesman to bring the goods into the barrack he brings scales and weighs them before him.

4682. Is the tradesman paid on the spot ready money?—He is paid once a week by the pay-serjeant.

4683. Does the pay-serjeant call any of the men of the mess to be present when he pays the tradesman?—No; the tradesman enters the goods himself in a book, and the corporal places his initials on the right every night, as to the quantity being correct, and the fatigue men of the company go and see their own goods weighed up, and then they are answerable to the company that they get their proper weight.

4684. If the commissariat supplied that which is now supplied for the messing, would you confine it to what the messing provides them, or would you include some of the things that the soldier now buys himself?—I think it would be as well to give the mess breakfast as it now stands, but in the evening I think it would be well to provide him with a portion of butter with his tea, and I should recommend that they should have coffee in the morning, and tea in the afternoon.

4685. You were in Bulgaria, were you not?—Yes.

4686. Did you find that the system of these companies supplying themselves with their messing accounts answered there?—We had a commissariat tent opened there.

4687. You found that you could not supply yourselves at all?—Yes, we used to go to the commissariat, and the greatest difficulty arose when the green coffee came out; we had no means of grinding it, and the soldiers used to get a shot and pound it as well as they could.

4688. (*Sir H. K. Storks.*) Without roasting?—No, they roasted it in the camp kettles, but it destroyed the camp kettles, it made the solder run.

4689. (*Mr. J. R. Martin.*) It would be well to send the coffee out ready roasted?—Yes, but I think that tea is always preferable on a campaign, it is so much easier made, unless they could have the coffee sent out to them ground, and all ready.

4690. (*Sir H. K. Storks.*) How do you cook the rations? Is the beef boiled?—Each company selects their own cook and they tell the cook in the morning how they will have their dinner dressed; perhaps to day they will have soup, and to morrow roast meat, and perhaps baked the next day, so that they have constantly a change.

4691. In the different barracks in which the brigade of guards is quartered are there means in the kitchen for baking and roasting?—They are getting those places now made, previously there were not.

4692. What did you do then?—We send the rations out to a bakehouse and pay for them.

4693. How did you pay for them?—They were paid for out of the vegetable money.

4694. Then though the men got bread and meat they got a small proportion of vegetables?—Yes, we used to pay sixpence a tin; it generally used to come to a shilling a company the day they had a bake.

4695. (*President.*) In Bulgaria there was a stoppage of $3\frac{1}{2}d.$, and afterwards there was an enlarged stoppage when the commissariat supplied you with coffee and rice?—Yes; it was $6d.$ on board ship if we took grog, and after that we had a stoppage of $4\frac{1}{2}d.$, that was when we got the tea and coffee.

4696. Did that cause any difficulty in the accounts?—Not any; each man was charged $4\frac{1}{2}d.$ a day for his rations, and when it was $3\frac{1}{2}d.$ he was charged that.

4697. Later in the campaign was there not a confusion in the accounts from having no record of how many days a man had been under one stoppage?—I never heard of it in my battalion, but I left after the battle of Alma.

4698. You say that there is a different stoppage on board ship according as the men took the grog or not; do you think it is a good thing to serve out the spirit ration on board ship?—I think it is one of the best things that the men can have, the water is rather bad on board ship, and this rum is mixed up with a portion of water.

4699. Is it always drunk with water?—Yes, always.

4700. The men are not allowed to take it neat?—No.

4701. (*Sir James Clark.*) What proportion of water is mixed with the rum?—We had one part of rum and two of water.

4702. (*Sir H. K. Storks.*) It was two-water grog?—Yes.

4703. (*Sir James Clark*) Did all the men take it?—Yes.

4704. (*Sir H. K. Storks*) Was it drunk at the tub?—Yes.

4705. (*Mr. A. S. Stafford.*) Was the rum generally good?—Very good indeed.

4706. (*Sir James Clark.*) Do you think if the water was good there would be the same necessity for the rum?—Yes, they like it.

4707. (*Sir H. K. Storks.*) Do you think that it is good for them?—Yes; I think it is, I should always prefer grog on board ship.

4708. (*Mr. J. R. Martin.*) Do you think it is good for young soldiers?—Yes; the quantity is so small that is given to them.

4709. (*President.*) Does it not create a habit that they cannot cast off afterwards?—I think not.

4710. But a soldier on board ship is not at work like the sailor?—No.

4711. Do you still think that he requires it?—Yes; in the ship that we went out in the sailors were not allowed any grog; it was the Ripon, but I know that if they had a chance they used to try to get some from

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the soldiers; the captain restricted them not to have any spirits.

4712. The soldiers had it?—Yes.

4713. (*Sir H. K. Storks.*) What do the men in your regiment drink principally in London?—Porter.

4714. Do they like it better than spirits?—Yes, very few soldiers in London drink spirits; it is generally porter or mild ale.

4715. (*Dr. A. Smith.*) Would it not be better to give them ale or porter on board ship instead of rum?—If it could be done the men would prefer beer to liquor.

4716. (*Sir James Clark.*) What quantity of spirits do they get?—Half a gill, eight men to a pint.

4717. (*President.*) Do you like the present forage cap?—I should a prefer a peak to it.

4718. What kind of peak—the French peak?—Not the English peak; I should prefer one that stood off more straight; I do not say exactly like the French, not with a cord at the side; but a peak is preferable to the forage cap in hot and in wet weather.

4719. What is the objection to the English peak?—I always consider the peak that we wore did more harm than good, for it laid down so close to the forehead the sun used to strike on the peak and almost blistered the forehead, and in wet weather it was no protection to the face, and the rain ran down just the same as it does now without a peak.

4720. Did it hide the eyes?—It never came down low enough; the cap was rather small and the peak just came down below the eyebrows.

4721. (*Sir James Clark.*) You think that a larger peak extending farther from the face would be better?—Yes.

4722. (*Sir H. K. Storks.*) Your forage caps are not like the forage caps of the line?—Theirs are woven.

4723. Which do you think is the best?—I prefer the cloth cap.

4724. What do the men pay for the cloth cap?—3*s.* 10*d.*

4725. Do the men pay for them?—Yes; the first forage cap that a recruit gets is given to him in the kit now; afterwards he keeps up that part of his necessaries himself.

4726. (*President.*) Did you like the cap that the guards had two or three years ago, the pointed cap;—No; it was too hot in summer, and the appearance of the thing was bad.

4727. (*Mr. A. S. Stafford.*) Was it not very generally unpopular with the men?—Yes, they never liked it.

4728. (*Sir H. K. Storks.*) The men wear a white fatigue jacket, do they not?—Yes.

4729. What do the men clean it with?—With pipe-clay.

4730. Do you think that any ill effects result from that white jacket, or that their health suffers from that jacket which is cleaned with pipe-clay?—No.

4731. Which is the most durable, the red fatigue jacket or the white fatigue jacket?—The red one.

4732. (*President*) The white one is very cold, is it not?—No; it is all made of wool.

4733. Is the stock now worn a good one?—No, it is not.

4734. Do you think it is better, or worse than the old thick stock?—It is better than the one that we had; but there is room for plenty of improvement. I have one here,—this is the present pattern. (*The same being handed in.*)

4735. Have you not one of the old ones?—No.

4736. This is lighter than the old one?—Yes. This is a stock (*producing the same*) that was made by a corporal in the 2nd Life Guards.

4737. Would it last as long as the other?—Yes; it has been in wear nine months.

4738. Has it not a tendency to roll up?—No; that collar round it fits with the seam of the collar of the coatee, and the stock never moves, consequently it is always in one place and keeps its position.

4739. (*Mr. A. S. Stafford.*) May this be worn?—Yes, that stock is being worn by the acting serjeant.

4740. (*Sir H. K. Storks.*) It is not the regulation, and it might be forbidden by the commanding officer?—Yes; this is another (*producing the same*) that I have worn about eight or nine months.

4741. (*Dr. A. Smith.*) Has not this stock become very general in the guards now?—No, this man tried to get this pattern approved of; he served a few of them out, and this was given to me by an officer of the regiment to be tried; of course you can wear that the same as a handkerchief.

4742. (*Sir H. K. Storks.*) In what battalion were you?—The third battalion.

4743. (*President.*) How is this stock known?—It is not known at all only in the man's own regiment.

4744. What is the name of the man who invented it?—Corporal Macdonald of the 2d Life Guards.

4745. (*President.*) One of the faults you find with the old stock is, that it has not that little projection all round it by which it would be kept down by the coat, and it keeps slipping up?—Yes, it turns round and it is too stiff.

4746. (*Dr. A. Smith.*) Does it not also cut the lower part of the neck and chafe it?—I have heard the men complain of it when it has been very hard, but the other being made of soft leather fits all round alike. I should prefer the stock without binding, the binding only wears away.

4747. (*President.*) What is your opinion of the knapsack?—There has been very little alteration made in the knapsacks in the Grenadier Guards, and I cannot speak to the last pattern.

4748. (*Sir H. K. Storks.*) Is the new knapsack a better one than the old one?—Ours have had very little alteration made in them.

4749. You fold your great coat now instead of carrying it rolled?—Yes.

4750. Is that as good as being rolled?—I always like a coat rolled on the top of a knapsack.

4751. Does not that inconvenience a man in sloping his arms when marching?—No.

4752. Does it not interfere with the rear rank firing?—No, not if the coat is done up very neatly, and put on the top of the knapsack, and made to ride near to the pack.

4753. Does the pack ride more easily rolled up on the top than the other?—Rolled up on the top.

4754. Is the breast strap very inconvenient?—I do not think it is of any service.

4755. (*President.*) Have you ever tried Berrington's plan of fastening the knapsack in the Guards?—I have never seen it.

4756. (*Mr. A. S. Stafford.*) Do you think the present mode of fixing on the knapsack might be improved or is it in your opinion very satisfactory?—I always preferred the line knapsack to that of the guards, and the way they have of hooking the strap—ours buckles—theirs hooks.

4757. (*President.*) And you require a man to help you on with it?—Yes, most men do; very few men can put on their knapsacks themselves.

4758. (*Sir H. K. Storks.*) You have all the tails of the straps hanging down?—There are small loops and they are tucked in, but I prefer one with a hook to it, so that a man could do it himself.

4759. Are the new accoutrements an improvement?—The waist-belt is a great improvement.

4760. Are the 60 rounds of ammunition carried lightly?—Yes, I think so.

4761. The pouches are hung shorter now—is that an improvement on a march?—Yes, so long as you can get the flap of the pouch open under the knapsack you cannot have it too short to make the least weight of it.

4762. (*President.*) Is the cloth of the present clothing of the guards an improvement?—Yes, it is a great improvement; particularly for the year 57–58.

4763. (*Sir H. K. Storks.*) Is the clothing better made?—Yes, but I do not know that it is particularly

better made than we have had it in our own regiment, because we had an establishment of our own.

4764. (*Mr. A. S. Stafford.*) Do you like the present tunic?—Yes, I prefer the present dress, but with a single breast.

4765. (*Sir H. K. Storks.*) What do you think of the soldiers' great coat, is it convenient?—It is better this last few years.

4766. In what respect?—It is a better material, a little; but I think that the soldiers' great coat ought to be a better article altogether.

4767. And a lighter description of coat?—Yes, rather, and something that would turn the water.

4768. (*President.*) Something that was closer?—Yes.

4769. Why do you like the tunic better than the coatee?—For one thing, there are no epaulettes on the shoulder, and you feel more loose in it; and I think in winter it would be a more comfortable coat having something round the hips.

4770. (*Sir H. K. Storks.*) When a man has been on sentry all night, if the coat has got wet, it is difficult to fold?—Yes, and it rides very heavy after that, particularly with his blanket as well.

4771. (*President.*) All the clothing is made much looser than it used to be?—No, it is about the same.

4772. Are not the sleeves looser?—Yes, they are rather larger, and that is a great deal better.

4773. (*Sir H. K. Storks.*) Do the men wear drawers?—Yes, all the guards wear them, but I do not think that the regiments of the line do.

4774. Are the trowsers made of a good material?—Better than they have been.

4775. A man gets a pair every year, does he not?—Yes, one, but that is not sufficient.

4776. Does he buy another pair in the course of the year?—Yes, one pair of summer trowsers.

4777. (*President.*) What summer trowsers have you in the guards?—It is a sort of tweed.

4778. Are they dark blue?—No, gray.

4779. The white trowsers are quite given up, are they not?—Yes, altogether.

4780. (*Mr. A. S. Stafford.*) Do you approve of that?—Yes, they are very uncomfortable things.

4781. (*Sir H. K. Storks.*) The men had to pipeclay them?—Yes, they pipeclayed them, and they sometimes put them on wet.

4782. (*Sir James Clark.*) What are the drawers made of?—The men can have either serge drawers or cotton.

4783. (*Sir H. K. Storks.*) How does the soldier pay for them?—He is put under stoppages for them.

4784. How can that be when they are not in the warrant?—A man is put under stoppages, and that is done by the commanding officer.

4785. Are the ammunition boots good boots?—Very bad indeed.

4786. When a soldier gets his ammunition boots, are they remade or does he wear them as they are?—He wears them as they are, but the boots of this year are the worst we have had for a long time; I never saw them so bad.

4787. (*President.*) What is the reason of that?—I do not know. Our boots last year were exceedingly good boots; they were made by a man at Windsor.

4788. (*Mr. A. S. Stafford.*) By whom are they now made?—I do not know; they come from Weedon.

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4789. (*Sir H. K. Storks.*) Would it be desirable to give the soldier leather gaiters into which he could tuck his trousers on the march?—That would do in the field; but I do not think it is necessary on home service.

4790. But in the field?—Yes; I think it would be an advantage to him, because it would keep the bottoms of his trowsers out of the dirt.

4791. Do you think socks a very essential article of equipment?—Yes; I should prefer them to stockings.

4792. When you were in Bulgaria did the men wear socks, or did they leave them off?—They all wore them.

4793. (*Dr. A. Smith.*) Do you know anything of a pattern boot made by a man in the Strand, and which was introduced to a certain extent in the guards, with a sort of spring in the middle of the boot?—I saw the boots, but I cannot speak as to how they wore.

4794. (*Sir H. K. Storks.*) Would a laced boot be better than the blucher?—No.

4795. Why?—I have worn laced boots in the service and on the march; in wet weather, on a dirty road, the grit and the water get into the lace holes and blister our feet.

4796. (*Mr. J. R. Martin.*) What do you think of the head-dress of the guards?—A great improvement has taken place in cutting down the cap, it is more comfortable for the head than it used to be; at one time it was very uncomfortable, some 19 or 20 years ago.

4797. Is it not too heavy now?—No; it is not so heavy as it looks.

4798. (*President.*) It is not so heavy as a shako, is it?—I think not; some of the caps are quite as light as the shako.

4799. Is it much more comfortable?—Yes, the grenadier cap is a very comfortable head-dress now that it is lowered.

4800. It protects them from the sun and rain too, does it not?—Yes.

4801. Is it very difficult to dry when it gets wet?—No, it soon dries.

4802. (*Mr. A. S. Stafford.*) Do you approve of it altogether?—Yes, I do; but I would not have them made any higher than they are now; if they were made higher they would become a nuisance on the march in rough weather, and they would become top-heavy, and it would make a man's neck ache.

4803. (*Dr. A. Smith.*) With reference to the ration, you said before that some men are satisfied with the quantity of meat allowed, and that others could eat more; during the 21 years that you have been in the service should you say that the majority of men considered that three-quarters of a pound was sufficient, or did the majority complain of it?—They could eat more, taking the majority of the army right through.

4804. (*Mr. J. R. Martin.*) If they got a larger ration of meat, would they not like to save a part of it for supper?—If they got a larger ration of meat that would do away with giving them butter in the evening meal.

4805. They would like a supper of that kind better?—Yes; and they would leave a portion of it, which they would fry or eat cold at their evening meal.

The witness withdrew.

Serjeant GEORGE FENTON examined.

Serjeant George Fenton.

4806. (*President.*) You are in the artillery?—Yes.

4807. How many years have you served?—Very nearly eight years.

4808. Were you in the Crimea?—Yes.

4809. How long were you there?—I landed there in December 1854, and I left in June 1856.

4810. (*Mr. A. S. Stafford.*) How many clasps have you?—Only one.

4811. How is that?—It was after the battle of Inkerman.

4812. (*Sir H. K. Storks.*) What attack were you in?—In the right attack; then I went to Kertch, and I remained there for about eight months.

4813. (*President.*) What is the whole amount of the stoppage for the ration, the messing and washing in the artillery?—10*d.* at home.

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4814. That includes washing?—Yes; 9*d.* a day for messing, and 1*d.* for washing.

4815. (*Sir H. K. Storks.*)—How much is it abroad?—6*d.*

4816. (*President.*) Why is the difference so great abroad?—I cannot account for it, unless that the government supplies most of the articles abroad.

4817. Then the man has a much larger balance abroad than at home?—Yes.

4818. Do the men think that the stoppage is too much?—Yes, they think that 8*d.* a day is sufficient.

4819. 7*d.* for the ration and messing, and 1*d.* for washing?—Yes, and they think they ought to get the washing done for a halfpenny.

4820. Why should your washing cost double what it does in the line?—I cannot account for that; it causes great dissatisfaction.

4821. (*Sir H. K. Storks.*) How many shirts do the men wear a week?—Two.

4822. (*Mr. A. S. Stafford.*) Do your men wear drawers?—Yes, they do generally.

4823. (*President.*) And a flannel vest?—Yes, that is part of our kit; we have two flannels as part of our regimental necessaries; the drawers are not.

4824. Does not that account for the difference in the price of the washing, as the line have only the shirts to wash?—We think that 3½*d.* for washing a single flannel is too much; the drawers are not allowed to be washed unless a man pays extra for them.

4825. How do your men manage to get their messing for a third meal?—They deal with any person they think will supply them the best.

4826. Is it done by companies?—It is generally done by rooms; there are 14 men in a room; the non-commissioned officer in the room sees what the articles are that are purchased; he asks the men what he is to buy, and he orders it, and the bill is sent in, and he takes the bill to whoever pays the company.

4827. He takes the stoppage?—Yes; and hands him back the balance, and pays the money.

4828. Who selects the tradesman?—The men themselves; we are not bound to any tradesman, no one has a contract.

4829. If you thought that a tradesman did not supply you with good articles, what should you do?—We should go to another.

4830. That is not left to the discretion of the non-commissioned officer?—No; the men can go where they like, and pay for them, and if they do not wish to pay for them themselves, then they can go to a man who is sanctioned by the captain for giving good work.

4831. (*Sir H. K. Storks.*) Who pays the bills?—Whoever is paying the company, sometimes a bombardier, or a corporal.

4832. Whoever pays the company pays the bills?—Yes.

4833. Does any one of the men belonging to the mess, check the bills?—The bills are sent in to the non-commissioned officer of the mess, and he has a pass book, and in that pass book they put down the price, and the non-commissioned officer looks at it, and if it is right he marks it right, and it is paid.

4834. (*President.*) You pay the market price?—Yes.

4835. If it was done by the Commissariat, could not they get the supply cheaper by making larger contracts?—Yes, we are better satisfied now by getting the bread and meat from the commissariat.

4836. Was that change approved of when it was made?—Yes.

4837. Practically, has it answered?—Yes, I think it has; the only objection that I can see is this, that when we are in the batteries one pound of bread is not sufficient, and the men always get more; they buy extra bread, but the 10*d.* supports it.

4838. They buy extra bread out of the mess money?—Yes.

4839. The ration is not large enough?—Yes.

4840. Is it large enough with regard to meat, the three-quarters of a pound?—Yes. When the men are in battery they can use two pounds of bread. I could eat it.

4841. Could you not eat more meat?—I do not find that the men wish for any more meat.

4842. (*Mr. J. R. Martin.*) Could you not eat more meat on foreign service?—Yes, we could eat a pound then.

4843. (*President.*) But the meat abroad is inferior?—Yes.

4844. (*Sir H. K. Storks.*) What do the men get to eat for their breakfast?—They get bread and either tea or coffee.

4845. (*President.*) How much bread do they get?—There is no restriction as to the quantity of bread, it is drawn from the commissary, and the men can eat it at one meal if they like; at breakfast they get bread and tea, or coffee, with milk and sugar.

4846. Do they buy anything out of their own pockets to add to their breakfast?—Yes, they generally buy butter, and they get an egg, or a herring; at dinner they have a change every day, sometimes they have a piece of meat baked, sometimes potatoes and meat, they very seldom have soup, they do not have soup once in a fortnight.

4847. Where do you bake?—We send the dinner to a baking house, we pay 2*d.* for a dinner.

4848. Would it not be convenient to you to have an oven in which you might bake?—Yes, at Athlone, where I was quartered, there was an oven, and that was used constantly, and it saved a great deal; if we send 6 tins in a week we pay 1*s.*

4849. (*Sir H. K. Storks.*) How do you provide the money for paying for baking?—Out of the mess money.

4850. The men get less vegetables?—No, they get so much less porter; we get from three to four pints a week generally, if the price of provisions is low. When we were in Ireland we got, on an average, 5 pints of beer a week; as the prices of provisions rise we get less beer. In Woolwich we get none.

4851. (*Mr. A. S. Stafford.*) Is Woolwich a dear place?—A very dear place.

4852. (*President.*) When you went to the Crimea, did you find this system going on, that there was a stoppage for the ration, and a stoppage for the messing, the companies providing themselves?—The thing had broken down, and it could not be carried out—the government provided everything and stopped fourpence-halfpenny a day, and if a man got imprisonment he lost all.

4853. Was there not much difficulty in settling the accounts, from there being various stoppages?—A great deal, but not from the stoppages, it was more from want of convenience to get the accounts made up; our commissariat was not properly established.

4854. Had you all your regimental books perfect?—I do not think there were three with the company.

4855. You did not know how many days a man had been on board ship?—Yes, we knew that, by making out the muster rolls on board ship, but afterwards it was mere guess work—we might have had 20 men in hospital and know nothing about it, they were sent down to Balaklava.

4856. I suppose the accounts were settled more by guess work?—Yes.

4857. Were the accounts fairly settled?—Yes, the men were satisfied.

4858. Did some of them think they had been ill-treated?—They were all satisfied as far as the accounts went, the only loss that occurred, I think, must have been a loss to the country—the pay-serjeants did not wish to wrong the men, they would rather give them something over, they stopped as much as they thought was right.

4859. Do you think that a flannel shirt would be a better thing than a cotton shirt and a flannel under-waistcoat?—No, I do not think so.

4860. Have you ever tried the flannel shirt?—Yes, I used them in the Crimea.

4861. Did you like them ?—Yes, but I like to have a cotton shirt, the men all approve of that—there is another thing, that it is liable to contract a great deal of dirt through the men going out and getting into low houses, and they would bring in a great deal of filth in that way, and it is impossible for the non-commissioned officer to see that all the men change their flannel shirts.

4862. (*Sir H. K. Storks.*) When do they change their shirts. ?—On Sundays and Thursdays, the flannel waistcoat once a week, and the cotton shirt twice.

4863. (*Mr. J. R. Martin.*) At home you do not think the flannel shirt necessary ?—No, and most of the men are of that opinion, I think.

4864. (*President.*) If the commissariat undertook to furnish a man with all that he now has, and three meals a day, and there was one uniform stoppage in all places, and at all times, would it be an advantage or not ?—I think it would be a decided advantage.

4865. Would the men dislike the change do you think ?—I do not think they would dislike it, some of them would speak against it at first, soldiers will always grumble, but I think in the end they would be decidedly in favour of it, but they would not be inclined to pay 10*d.*

4866. Do you like the stock that is worn by the soldiers ?—It used to hurt the neck ; I have heard the men complain of it, coming off guard, it makes the neck quite sore.

4867. It is not so stiff as the old one ?—No, but we are stooping so much about the guns in battery it catches our necks.

4868. But you take it off when at work do you not ?—Not unless we are in battery—in the stables.

4869. But in battery ?—When we are at work with the horses inside we do, but when we go out to take the guns to pieces we are buttoned up, and the stock hurts the neck greatly ; the moment the men break off parade they unbutton the jacket and take off the stock, and as soon as they hear "right face" the jacket is opened and they take off the stock.

4870. Do the men wear a stock in the artillery or a handkerchief ?—Generally a handkerchief, and the officers do not complain of it—I wear a handkerchief, I have one on now, and the officers do not object to it.

4871. Do the men look slovenly with it ?—They take more pride in keeping it nicely in front of them.

4872. (*Sir James Clark.*) Would a handkerchief be better than a stock always ?—I should not like to give an opinion on that, but I think a handkerchief is the most comfortable.

4873. (*President.*) Is the busby a comfortable dress ? No, very uncomfortable—it is very hard, almost as iron, and it presses most dreadfully on the temples, it makes quite a dent in my forehead.

4874. You used to wear a shako, did you not? —Yes.

4875. Did you like that better as a head-dress ?—Yes, better, but the men like the present, because it looks better ; they are both much the same with regard to comfort.

4876. (*Mr. J. R. Martin.*) The weight and hardness of it are very much complained of ?—Very much so.

4877. (*President.*) What kind of forage cap do you wear in the artillery ?—We have got a kind of woven cap with a yellow band much the same as the infantry caps, and the men detest it.

4878. Has it a peak ?—No.

4879. Why do they dislike it ?—It is so heavy, and so large at the top, that it spoils the appearance of the men altogether.

4880. (*Mr. Alexander.*) Does it protect the head well ?—Yes ; but it is very heavy, it is a capital cap for service.

4881. (*Sir H. K. Storks.*) Why is it a good cap on service ?—You can pull it down over your ears, and roll it up, and kick it about, and it is as good as ever.

4882. (*President.*) Do you think that is a disadvantage ?—It is a great advantage, but the cap we had before all the men seemed to praise, the cloth cap with the red band

4883. Was that like the cap the cavalry wear ?—It is something like the guards' cap, not quite so large in the crown.

4884. (*Mr. J. R. Martin.*) The advantage of the present cap is that it can be drawn down over the ears, and a man could lie upon it ?—Yes ; and you could not spoil it.

4885. And that was a great advantage on service ? —Yes.

4886. Are your barracks at Woolwich pretty well ventilated ?—Yes ; I stop in the front barrack at Woolwich, and it is very well ventilated.

4887. (*Sir James Clark.*) Do you ever go into a barrack-room before the men are up in the morning ? —Yes ; and there is a very nasty smell, quite sickening.

4888. (*President.*) Have the men got convenient places for washing ?—Yes ; they have every convenience at Woolwich, and also at some of the out-stations that I have been at.

4889. Do you ever bathe ?—There is no opportunity ; they can scarcely ever bathe at the barracks.

4890. Do you know of the bath in the Arsenal at Woolwich ?—Yes ; and the men are paraded 100 at a time, and marched down, but that may not come to your turn once in 10 days.

4891. But once in 10 days a man can get a good washing ?—Yes.

4892. Otherwise he has no means ?—Unless he gets in the washing room, and gets some basins of water.

4893. Can a man wash his feet ?—Yes, and they do that once or twice a week.

4894. *Dr. A. Smith.*) Have they not troughs for that purpose ?—No ; only iron basins, no troughs.

4895. (*Mr. J. R. Martin.*) You have mentioned the breakfast and the dinner, what do they have in the shape of an evening meal ?—Tea and bread.

4896. If the men had a larger meat ration, would they not prefer to have something left over from the dinner, in order to make a kind of supper ?—I think they would.

4897. (*Dr. A. Smith.*) You say that you think the men are generally satisfied at home with three-quarters of a pound of meat ?—Yes, for dinner.

4898. On occasions when the meat is baked, of course a certain quantity of that meat passes away, and then there is a certain portion of bone ?—Yes.

4899. That would reduce each man's allowance to half a pound ?—From eight to ten ounces.

4900. Do you think that a man actively employed coming into his dinner would be satisfied to consume only eight ounces ?—No ; but we generally bake it with flour and potatoes.

4901. (*President.*) There is only that quantity of meat ?—Yes, and I think they could eat a great deal more, but I think they are generally satisfied with the quantity.

4902. (*Mr. J. R. Martin.*) That is in consequence of the bulk of the materials which they add to the meat ?—Yes, after they have got their dinner they are very well satisfied with it.

4903. (*Sir H. K. Storks.*) Do you get any puddings ?—Yes, generally once or twice a week.

4904. Are they paid for out of the messing ?—Yes.

4905. (*President.*) Flour, suet, and raisins ?—Yes.

4906. Are there urinals in the barrack room for the men ?—There are urine tubs.

4907. Do they not smell very much ?—Shockingly.

4908. They are put in at night, are they not ?—Yes, sometimes they are outside the room, and sometimes inside.

4909. Are they made of wood ?—They are large wooden tubs, and they are kept there during the day, and they cause a very disagreeable smell.

4910. (*Mr. Alexander.*) Why are they kept there during the day ?—There is no place else, and they are used to carry up the water to wash the room out with.

Serjeant George Fenton.

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4911. (*President.*) You are in the Normal School at Chelsea?—Yes.

4912. They have some new urinals at Chelsea?—Yes.

4913. Do they answer?—Yes.

4914. They have the water running?—Yes.

4915. And there is no smell?—Not the least.

4916. (*Sir H. K. Storks.*) If a man wants to go to the rear what does he do?—Sometimes he runs down without anything but his shirt on, with nothing on his feet.

4917. Does the non-commissioned officer lock the door?—No.

4918. (*President.*) If the men had common crockery chamber-pots would they be broken?—I do not think you could keep them there during the day. I think they would be broken and knocked about. The barrack-rooms are very small, there is not much room for passing up and down when the tables are put out.

4919. (*Dr. A. Smith.*) Have you seen the enamelled iron chamber-pots?—No. There is one remark I wish to make, that the men generally get supper for themselves.

4920. Do they have a fourth meal?—Yes; we get tea between half-past six and seven o'clock when we are in battery, and there is the stable hour from half-past six to half-past seven, and the men come out and take a walk till about nine, and then they come in, and they generally have supper. They buy something from the canteen.

4921. (*Sir H. K. Storks.*) Is not that a proof that the meat ration is insufficient?—Yes.

4922. (*President.*) What is the pay of the men?—1*s.* 4¼*d.* a day, and they get ninepence when employed in public works, which is very seldom; during my service I have only received one day's pay for such work.

4923. Where have you been stationed?—I have been stationed in Athlone, Dublin, Woolwich, and Portsmouth.

4924. (*Dr. A. Smith.*) What do the men usually eat for supper?—It is generally pudding from the canteen, polonies and black puddings.

4925. (*Sir H. K. Storks.*) What do the men generally drink?—Porter.

4926. Not spirits?—No; I never saw spirits brought into a barrack-room, but I have seen cans of porter.

4927. (*Mr. J. R. Martin.*) You do not think the spirit ration is a good thing?—Indeed I do, I think that it saved the lives of a great many men abroad during the winter of 1854.

4928. (*President.*) Is it a good thing on board ship, do you think?—Yes, I think it will keep them from lying about the vessel or getting sick; it keeps up their energies, they are more roused up.

4929. But the men are not at work?—No, but it has a most extraordinary effect upon the men; the men who take none roll about half dead, and the others keep up their spirits and look lively.

4930. (*Mr. J. R. Martin.*) The water on board ship is not very good?—No, it is very bad.

4931. (*Sir H. K. Storks.*) Are the soldiers in the royal artillery permitted to bring beer into the barrack rooms?—Yes, for supper.

4932. And for dinner too?—Yes, and that is generally found out of the mess money; there is no order against bringing the beer in when the men require it unless it is brought in to excess.

4933. (*Dr. A. Smith.*) Do you think that the spirit ration on board ship would be better than porter or ale?—Yes, I think so; you would get very few men to drink porter or ale on board ship.

The witness withdrew.

Serjeant Joshua Sotheron.

Serjeant Joshua Sotheron examined.

4934. You are a serjeant in the 85th regiment?—Yes.

4935. How long have you been in the service?—13 years last March. I am at present a student at the Royal Military Asylum at Chelsea.

4936. (*President.*) Do you think it would be an advantage, or a disadvantage, if the soldier were placed upon a fixed stoppage, and the commissariat supplied him with all his meals?—I believe it would be rather an advantage than otherwise.

4937. Would not the soldier complain of it?—He would grumble, unquestionably; they very often do grumble.

4938. He would suspect that he would be worsted by the change?—They do not like to be tied down to permanent contracts; they like to get contracts where the things can be got cheaper. I have no doubt, that if government issue to them good qualities they would be satisfied.

4939. Probably if the commissariat made the contracts they would get the same quality cheaper than the soldier?—Yes.

4940. What is the stoppage for messing in your regiment?—Twopence-halfpenny a day; that is exclusive of the bread and meat.

4941. It does not include washing?—Yes, it does; twopence for mess money, and a halfpenny per day for washing.

4942. Therefore your stoppage is about 6½*d.* for food?—Yes; and a halfpenny for washing.

4943. Do you recollect when the commissariat contract system for bread and meat was introduced?—Yes, I was in Ireland; it was in 1846 or 1847.

4944. Were the men pleased with that change?—No, they were not; the men will grumble at almost any change, but they became perfectly reconciled to the change after a short time.

4945. The troops that were in Ireland when the change was made were in a situation to get the full benefit of it?—When the change was made, Ireland was recovering from a severe famine, and provisions were very dear; but the men were certainly benefited much by the commissariat contracts, though they did not know it, but they found it out afterwards, and they became perfectly reconciled to the change.

4946. Are the meat and bread as good provided by the commissariat as they were when provided by regimental contracts?—I find a very great difference in England. I found the meat and bread much better in Ireland than in England; the bread was much better liked by the men; it may not have been more wholesome, but it was more palatable.

4947. Have you ever had any service abroad?—No.

4948. Can you describe what a soldier gets for his breakfast?—He gets a pint of coffee with sugar and milk and a pound of bread. At dinner he gets three quarters of a pound of beef, a proportion of vegetables, a pint of soup, and potatoes.

4949. Any bread?—No, except when the potatoes are bad.

4950. (*Sir H. K. Storks.*)—"The proportion of vegetables" are the vegetables put into the soup, and not the vegetables served with the meat?—Yes. The third meal is a pint of tea and half a pound of bread each man, but that bread for the day is bought out of the mess money, there is tea, and coffee, and sugar, vegetables and bread bought out of that 2*d.* per diem.

4951. Do the men get anything in addition besides what is provided by the mess money—at breakfast, such as bacon or herrings?—No, unless a man chooses to buy it for himself.

4952. Do they do so?—Yes, they do.

4953. The majority of them?—The majority of the soldiers are very fond of a bit of butter, and sometimes a herring.

4954. At the third meal do they do the same thing?—Yes, the soldiers generally save a little meat from their dinner to use at tea.

4955. Then they must get short commons at dinner?—Yes; they are willing to do that, to have a little meat for their tea.

4956. Do you think that the ration of three quarters of a pound of meat, including bone, after it is cooked, is enough for a man?—It is very little—I have seen on a soldier's plate perhaps not two ounces, but I attribute that to the dishonesty of the cook, and sometimes the cook's assistants.

4957. Do they purloin the meat?—Yes, in fact I have frequently known the cooks punished for selling it.

4958. (*Sir James Clark.*) But suppose that a man had the full allowance?—Then the soldier would have enough, if he had three quarters of a pound without bone.

4959. (*Mr. J. R. Martin.*) It would be enough for his dinner, but nothing would remain over for supper?—No.

4960. (*President.*) How much do you think the man actually gets of cooked meat?—On the average, I should say that each soldier gets of cooked meat, not more than 7 or 8 ounces, if it amounts to half a pound that is the outside; he may on some occasions have had a little more, but very seldom more than 7 or 8 ounces.

4961. (*Dr. Alexander.*) Do you think that is sufficient?—It is hardly sufficient for young soldiers, the old soldiers get accustomed to light eating.

4962. (*Mr. A. S. Stafford.*) Is the meat always boiled?—Yes; in the infantry.

4963. (*President.*) Would it not be an advantage to be able to bake the meat?—Yes, a very great advantage.

4964. Do not the men complain of the sameness of cooking the meat?—It is very common.

4965. Do your men never send out meat to be baked?—No, they cannot afford it.

4966. If they had an oven in the barrack, would it not be an advantage to boil and roast on alternate days?—I think it would be a very decided advantage, and I am sure the men would be very thankful for the change.

4967. Upon the whole you think it would be an advantage to have one stoppage all over the world, and that the commissariat should supply the men with three meals?—I think it would be a very great advantage.

4968. With regard to your regiment, do your men wear flannel shirts or cotton shirts?—Flannels were discontinued by a general order in 1846, and cotton shirts were substituted.

4969. Which do you like the best, have you ever tried flannel shirts?—I like flannel much better.

4970. Is it expensive?—Yes, it is expensive; three flannel shirts cost a soldier 14*s.* 6*d.* and the cotton shirts come to something about 2*s.* 10½*d.* each.

4971. (*Mr. Alexander.*) Do you wear a flannel underneath?—No.

4972. (*President.*) Did the men like the change from flannel to cotton?—Yes, they liked it very well.

4973. Why?—Because it was a change.

4974. Was it cheaper?—Yes, the shirts were cheaper, and they lasted longer than the flannel shirts did.

4975. The flannel shirts do not wash so easily, do they?—No, I consider that they shrink very considerably.

4976. And they cannot be mended as easily as the cotton?—No.

4977. If you had to wear a flannel vest underneath the calico shirt, that would give you all the advantages of the flannel shirt, but then the expense would be greater?—I do not know whether the men would like it or not; a great many wear these inside shirts.

4978. Do you wear a waistcoat of any kind under your coat?—Yes.

4979. (*Sir H. K. Storks.*) But you do not consider that by regulation it forms any part of the soldiers' necessaries?—No.

4980. (*President.*) In practice do the privates wear a waistcoat?—In the winter time they generally contrive to make a waistcoat of an old coatee or shell jacket.

4981. Do you like the leather stock that is now worn?—Yes, I do.

4982. Is it not too stiff?—No.

4983. Do you recollect how it was worn before the war?—Yes.

4984. It was much stiffer then?—Yes.

4985. Is not the present one an improvement upon that?—Yes, I have not seen the stock that has been recently issued, but before I came to Chelsea there was a soft stock made of satinet, or a kind of worsted.

4986. Which do you prefer?—I prefer the leather stock.

4987. You would not go back to that very strong thick stock?—No.

4988. (*Sir H. K. Storks.*) Did you ever march with that stock?—No.

4989. What were you before you came to Chelsea?—I was a company serjeant.

4990. You had not been doing duty in the ranks?—Yes; I had been doing duty in the ranks for some years.

4990a. For how many years?—Up to 1854, from 1844 to 1854, 10 years.

4991. (*President.*) Do you think the soldiers like the leather stock?—Yes.

4992. Why?—He prefers the leather stock, because it does not give him that clumsy appearance about the neck that the soft stock would; they like it, especially when marching out; altogether I should say they prefer it to the soft stock. I have heard the men grumble very much about the soft stocks, as they destroy the setting up of the collar of the coatee. The men do not look half as well about the neck as they did when they wore the leather stock.

4993. So, that it is a question of appearance rather than of comfort?—Yes; it is.

4994. But they take them off on the line of march?—They do.

4995. Is not that a proof that they are uncomfortable?—Under certain circumstances they do not like them, that is in the summer time; they would prefer a soft stock then; but for mounting guard, for walking out, or for barrack square drill they have no objection whatever to the other.

4996. That is, when they are called upon to make any exertion, they would rather have a soft one?—Yes.

4997. (*Mr. A. Stafford.*) What do you think of the knapsack; could any improvement be made in it?—I do not think so.

4998. Is it satisfactory as it is?—I do not think it can be made any better, or more satisfactory than it is at present.

4999. (*President.*) Does the soldier generally like the fatigue jacket, or the guernsey-frock instead?—I rather think he likes the fatigue jacket in country quarters; they walk out in the fatigue dress, and they prefer doing so.

5000. A man goes out in his shell jacket to save his coat?—Yes; and they look smarter.

5001. Have you had much experience in barracks?—Yes; I have been seven years in England.

5002. And Ireland too?—Yes.

5003. Should you say that the barrack-rooms generally are tolerably sweet, or is there a sufficient supply of fresh air?—No; there is not.

5004. At night?—No; the effluvia is very unpleasant indeed.

5005. How do you account for that; are the windows kept shut?—They are generally kept shut down.

5006. (*Dr. A. Smith.*) Where there are openings to let air into the barrack room, are not the soldiers very apt to stop them up?—I do not know that they

Serjeant Joshua Sotheron.

7 June 1857.

are: the men generally like fresh air; and they seem to have an objection to have windows open at night—in the day time there is a sufficient current of air in the barrack-room.

5007. At night they are always closed?—Yes, and in summer time, in the day time, the barrack-room generally is very hot.

5008. Do the men complain of the barrack-room at night?—Yes.

5009. Are they not more afraid of cold than of heat?—Yes; and in the summer time the heat is very oppressive.

5010. Still they always sleep with the windows shut—why is that?—I cannot say, unless it is that they are afraid of catching cold.

5011. (*Sir H. K. Storks.*) Are the beds very closely packed in the barrack-room?—Yes; I have seen them only six inches apart.

5012. What accommodation is there in the shape of urinals in the barrack-room?—The urine tubs are brought into the barrack-room, and if a married person is living there, the tub is left outside of the room door, and it is altogether most disagreeable.

5013. There is a very bad smell from it, is there not?—Very bad indeed.

5014. (*Dr. A. Smith.*) Is not that the principal source of the disagreeable smell that you find in the barrack-room at night?—Not only that, but from so many men sleeping in a room.

5015. Which smell predominates?—The smell from the urine tub predominates.

5016. (*Sir H. K. Storks.*) Do not the men consider it a drawback and disadvantage to them to have married persons in their barrack-room?—Yes, they do not like it at all; it is quite as objectionable on one side as it is on the other.

5017. (*President.*) Why is it objectionable to the unmarried people?—A soldier will sometimes say foolish things, and let words slip that, perhaps, are not fit for a married person to hear, and they consider that it is a sort of restraint upon them.

5018. Do they take up more room?—Yes, the cooking, of course; the married people in the barrack-room require to cook, and in the summer time the heat is very great, and the slop and one thing and the other about the fire-place is sometimes very disagreeable to the men; and there are children also.

5019. (*Sir James Clark.*) Is there no separation from the married people in the barrack-room?—None whatever; they have sometimes curtains, and in some regiments the commanding officer will not allow them to keep the curtain up, except during the night, in order to have a circulation of air in the room.

5020. (*President.*) The men live a good deal in the barrack-rooms, do they not?—Yes, they do.

5021. Would it be an advantage if they had a day room separate from the sleeping-room?—A very great advantage; they are confined to one room all the day; they have very little room to walk up and down; there is a row of tables up the centre, and a row of beds on each side, and the men are cramped.

5022. Can they get light enough to read by.—Yes.

5023. (*Sir H. K. Storks.*) How do they get it?—They have candles, and in some barracks now they have gas.

5024. (*President.*) Where they use candles the light is very insufficient to read by, is it not?—Very poor indeed.

The witness withdrew.

Adjourned.

Friday, 19th June 1857.

PRESENT:

The Right Honourable Sidney Herbert, M.P.	Thomas Alexander, Esq., C.B.
A. S. Stafford, Esq., M.P.	Sir James Clark, Bart.
Col. Sir H. K. Storks, K.C.B.	James R. Martin, Esq., F.R.S.
Dr. Andrew Smith.	

President, The Right Honourable SIDNEY HERBERT, M.P.

Serjeant William Rhys examined.

Serjeant Wm. Rhys.

19 June 1857.

5025. (*President.*) You are troop serjeant-major in the 11th Hussars?—Yes.

5026. How many years' service have you had?—Very nearly seven.

5027. Have you served abroad?—Yes.

5028. Where have you served?—In the Crimea.

5029. How long were you there?—Eight months.

5030. At what period?—I went out with the regiment and came home in the January following.

5031. When did the regiment go out?—On the 10th May 1854.

5032. (*Mr. A. S. Stafford.*) How many clasps have you?—Four.

5033. (*President.*) What does your messing cost you?—Eightpence half-penny per day.

5034. How much does that include for washing?—Six-sevenths of a penny, 6*d.* for the seven days.

5035. That is about threepence a day in addition to the stoppage for the ration?—Yes; for the remainder—it includes a penny for the half pound of bread.

5036. How do you manage to mess yourself—do you do it by troops?—Yes.

5037. Who makes the purchases for you?—The troop serjeant-major.

5038. Do the men decide what they will have?—Yes.

5039. Who decides what tradesmen they will employ?—The troop serjeant-major.

5040. If the men were dissatisfied with the provisions, what would be done?—Then we change the man.

5041. As long as there is no dissatisfaction, you let the troop serjeant-major choose the tradesman?—Yes.

5042. What do your men have generally for breakfast?—Coffee, milk, and sugar, and the bread is served out in the morning—a pound and a half, the whole is served out in the morning.

5043. The pound that the government supplies, and the half pound which you buy?—Yes; and they take it for breakfast, and perhaps eat half the remainder for dinner.

5044. Do they get anything else for breakfast?—Yes, they buy it and pay for it themselves out of their daily pay.

5045. (*Mr. A. S. Stafford.*) Do they generally buy it?—Some of the men—most of them are under stoppages and cannot afford to buy it.

5046. (*President.*) What do you have for dinner?—Beef and mutton—mutton twice a week—the men have a baked dinner twice a week, on Thursdays and Sundays.

5047. Where do they bake them?—Outside in the bakehouse.

5048. Belonging to the barracks?—No.

5049. Who pays for it?—The baking is paid out of the vegetables that make the soup on other days, such as leeks, onions, flour and oatmeal, the potatoes are the same quantity as on other days.

5050. You take a shorter supply of other things to cover the expense of baking?—Yes.

5051. How often do they bake?—Twice a week, Thursdays and Sundays.

5052. And the other days your meat is boiled?—Yes; and a pint of soup a man.

5053. Have you no oven in the barracks?—No.

5054. Have you ever been in a barracks with an oven as well as a copper?—No.

5055. You are always obliged to take the meat out to bake?—Yes.

5056. What do you have for the third meal?—Tea, milk, and sugar; and there is sufficient to take an extra half pound of bread for their supper.

5057. Some of the men do that?—Some do; those who have money to spare.

5058. In that way, I suppose you get three good meals?—They could do with more meat.

5059. You have three quarters of a pound of meat; what does it come to when cooked and with the bone taken out?—It is a very small quantity; about 8 oz.

5060. Do you recollect when the meat and bread were bought under regimental contracts instead of being supplied by the commissariat?—Yes.

5061. Has the change been a good or a bad one?—A good one; I do not think we could have supplied it for the same price at times when meat has been dearer, not for the price that we get it now.

5062. I suppose the commissariat, buying a very large quantity, can get it cheaper per lb. than you could?—Yes; no doubt of it.

5063. Is it pretty good in quality?—Yes, it is.

5064. Was the change objected to when it was made?—Not to my knowledge. We lay in Ireland at the time.

5065. That was near the time of the famine, was it not?—A little after.

5066. But meat was dear then?—Yes.

5067. So that it was an immediate advantage to the soldiers in Ireland?—Yes.

5068. Could the same thing be done as to messing, so that instead of having two stoppages, one the commissariat and the other the regimental messing stoppage, there should be only one, and the commissariat should supply the vegetables, bread, and all the things necessary for the three meals?—I think it could.

5069. Would the same thing happen with the vegetables as with the bread and meat, that they could do it better for you than you could yourselves?—Yes; I think so.

5070. Are not people apt to be dissatisfied with what is provided for them, though they do not grumble when they provide it themselves?—I do not know; the soldiers, generally speaking, do grumble at a change, even if it is for their good, until they are acquainted with it.

5071. (*Mr. J. R. Martin.*) Until it is established?—Yes.

5072. It would save a great deal of trouble, would it not, to the paymaster and the clerks?—Yes; a great deal.

5073. The stoppages are rather complicated, are they not?—Not so much to them; it entirely lies with the troop serjeant-major in making out the accounts.

5074. In the Crimea did you wear flannel shirts or calico shirts?—I wore a flannel under-vest and a calico shirt.

5075. Did you like it better than a flannel shirt?—Yes.

5076. Why did you like it better?—I fancy it is cleaner; I never did like a flannel shirt myself.

5077. Why do you think it is cleaner; the one is washed as often as the other, is it not?—Yes.

5078. (*Mr. A. S. Stafford.*) In what way is it cleaner?—It is not quite so warm. A flannel vest and calico shirt are not so warm; a man does not perspire so much.

5079. (*President.*) In your regiment what stock are you wearing?—A leather stock.

5080. Is it very much slighter than the old one?—Yes.

5081. And better?—I think it is.

5082. You have lost your jacket and pelisse?—Yes.

5083. You wear a tunic, do you not?—Yes.

5084. Which do you like best?—The jacket and pelisse.

5085. Why do you prefer it?—For the appearance as much as anything.

5086. Is it warmer?—The pelisse is much warmer in winter than the tunic. I wore the tunic last winter.

5087. Could you wear the pelisse over your jacket?—No.

5088. You used to wear it instead?—Yes; in winter.

5089. What is your shako now?—The busby.

5090. Do you like it?—Yes.

5091. Does not it press upon your head?—No; there has been an improvement in it lately. It is made more to the shape of the head than formerly.

5092. Is your new clothing better or worse in point of texture?—Worse.

5093. Since the change was made from the jacket to the tunic?—Yes; when we had jackets and pelisses the cloth in the privates' clothing was, I should say, quite equal to the serjeants' of the present time, or very nearly so.

5094. Formerly was your clothing made up to the regular price, or were not additions made to your clothing by the colonels?—I do not know; there was nothing charged to the men.

5095. You say that the meat ration is not large enough?—I think not.

5096. For the rest it does very well with your messing money?—The bread is quite sufficient, a pound and a half.

5097. On board ship is the ration good?—Very good.

5098. It is a better ration than you get ashore, is it not?—I do not know; I did not care about salt meat.

5099. Were you sick?—Yes, I was.

5100. (*Mr. A. S. Stafford.*) Not all the way?—No.

5101. Did you not like the salt meat after you recovered?—Yes; I did very well after.

5102. How did you like the cocoa?—Not at all, and very few men I found that did like it in the troop that I went out with.

5103. (*President.*) Did you take the spirit ration, or anything in its place?—Yes.

5104. Do you think that a very good thing?—Yes; I do.

5105. What for?—It revives a man.

5106. But the men are not at work?—No; there is nothing in the shape of any liquors to be bought of any kind on board ship. You cannot buy it, and I think that a little served out that way does a man good.

5107. Is that on account of the sickness?—No.

5108. You think that a man is better for having some?—Yes, I do.

5109. (*Mr. J. R. Martin.*) The water on board ship is bad and the spirit improves it very much?—Yes; but we had the system of drinking the spirit at the tub as it was served out.

5110. It was mixed in the form of grog?—Yes; it was served out as two water grog, and we generally added a little more water to it.

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5111. (*President.*) It was not served out neat?—No.

5112. Does anything remain over from the dinner from which you can make out a supper?—No.

5113. Nothing?—No; some men might have some.

5114. You think that if there was more meat, something might be kept for the supper?—Yes; I think so.

5115. And the men would like it?—Yes; I think so.

5116. Do you think that the men require more meat?—Yes; a pound of meat a man, every man in the regiment could eat it.

5117. (*Mr. A. S. Stafford.*) Were you in the flank march after the battle of Alma?—Yes.

5118. How did you find the commissariat arrangements during that march?—They were pretty good.

5119. Did you get your rations?—Yes, we did.

5120. So far as you can judge the arrangements were satisfactory?—Yes; I think so.

5121. Was that the general opinion?—Yes, that was the general opinion of the regiment at that time.

5122. (*Mr. Alexander.*) How long were you going through that march?—We set off about nine o'clock.

5123. What time did you get to Trakhtir bridge?—I really forget. It was the same evening; but I really forgot the time.

5124. And the following day you went into Balaklava?—Yes.

The witness withdrew.

Colonel Joshua Jebb, C.B.

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Colonel Joshua Jebb, R.E., C.B., examined.

5125. (*President.*) You have paid a great deal of attention, have you not, to the construction of barracks and prisons and large buildings where great bodies of men are collected?—I have paid considerable attention in the discharge of my official duties to the construction of prisons, and before I entered upon those duties to the construction of barracks. I was also subsequently upon Sir Frederick Smith's committee for inquiring into the best construction of barracks.

5126. Has much change been made of late years in the construction of barracks?—I am not aware that there has been much change in the general construction and accommodation of soldiers; but additional buildings have been constructed which have administered to the comfort of the men.

5127. As regards the dormitories, they remain very much as they were before?—Yes; I think they do. I have not observed in barracks I have visited any great fundamental change in the principle of the construction; but I have not seen the most recently constructed.

5128. With regard to ventilation, have there been any attempts made to introduce more air into them at night?—Yes; attempts have been made to introduce more air, but nothing like to the extent which is necessary, or which has been effected in prisons erected under my superintendence. In the year 1844 I inserted a paper on ventilation in a work on subjects connected with the duties of the corps. It was more immediately addressed to the question of prisons; but I suggested, with reference to barracks, as follows:—"The system adopted for ventilating and warming prisons is equally applicable to barracks, casemates, &c.; and it is scarcely necessary to add that an object which cannot fail to have a beneficial influence on the health of the troops is deserving of serious consideration. A few practical suggestions on this head will form the subject of a separate paper, in the hope it may appear that the adoption of a regular principle of warming and ventilating barrack rooms, &c., will not only add to the comfort of the men, but will prove a measure of economy in diminishing the consumption of fuel."

5129. And do you consider that in your prisons you have brought the ventilation to as great perfection as you can fairly expect it to reach?—I think the ventilation and warming are fully provided for. There are two ways in which ventilation may be effected—one is a scientific or artificial mode of extracting from or propelling air through the different rooms and cells, by which any result as to quantity of air or temperature can be obtained and kept under control. The other, which is more applicable, I think, to barracks, is what may be termed accidental ventilation, merely requiring suitable provision for the egress of the foul air, and ingress of fresh air, in such a manner as to take advantage of circumstances, and not to subject the occupier of the room to a draught.

5130. Is it what you would call open, natural ventilation, as contradistinguished with artificial ventilation?—Yes, it might be so designated.

5131. Merely by orifices for the admission of air, and for its departure from the ward, no attempt being made by machinery either to exhaust it, or drive it in?—Natural ventilation requires very little more than to afford facilities for the entry and exit of air. As regards artificial ventilation, I first had my attention called to the principle on which it could best be effected, by observing the plan pursued in coal mines, where the most complicated workings are ventilated on the very simple principle of extracting the foul air by what is termed an upcast shaft, and admitting fresh air to supply its place by a downcast shaft. Acting upon that principle, I proceeded in the ventilation of the Pentonville prison, which, though not so complicated as a coal mine, was somewhat difficult. There were 500 cells to be ventilated, and the object to be attained was that 30 or 40 cubic feet of air should pass through every cell in a minute, and that means should be provided for regulating the temperature to any point the medical officer might determine. The system has worked admirably for the last 13 or 14 years. I may say that without intermission day and night, 30 to 40 cubic feet of air have passed through every cell per minute, and a remarkable equality of temperature has been maintained.

5132. And that produces no disagreeable disturbance of the atmosphere?—Not the slightest, and the cell is as fresh in the morning when first opened, as at any other time.

5133. Does not it blow the air about?—No; the prisoner is not sensible of the change that is going on. This result is chiefly caused by the withdrawal of the foul air from near the floor, and by a second opening higher up. The advantage gained by withdrawing the air near the floor, instead of admitting it there, is that the occupier is not sensible of a draught, and therefore does not stop it up; another necessary precaution is that of using large flues, so that the required quantity may be introduced at a moderate velocity.

5134. (*Mr. J. R. Martin.*) So that nowhere there be a thorough draught?—No draught is felt. The air comes in at a point over the door, and is withdrawn on the opposite side.

5135. (*President.*) That, you think, is the best arrangement for cellular building?—Yes; this further special advantage is gained, that where a prisoner is employed constantly in mat making, or other dusty occupation, there is a tendency downwards which causes the dust to enter the flue instead of the lungs. We found to what extent this was effected by the quantity of dust which accumulated in the flue, and which from time to time required to be burnt out.

5136. The system which answers for a small cell, would *à fortiori* answer well for a large apartment?—I

should probably take a different course with a large apartment. It would then be right to take advantage of getting rid of the foul air at once. In such a cell as I have described, there was 900 cubic feet of space for a single man, and having the power of withdrawing the air at any point, it was only necessary to look to prison objects; but in a large apartment occupied by many men, where the breath rises at once at a high temperature, it is better, I think, to take advantage of the difference of temperature, and withdraw the foul air from the ceiling.

5137. Where would the tube be for ingress?—Openings would be required in several places. It would not be right to trust to one place either of egress or ingress. If both openings were situated high up in a room, and warm air were introduced, it would pass away by the foul-air openings. I should recommend openings for both foul and fresh air near the floor and near the ceiling.

5138. So many in each ward, according to the size?—Yes, a proportionate area is required, and about a quarter of a superficial foot for each person occupying the room is not too much.

5139. What is the space that you give to each man in the cells?—The cubic contents of the Pentonville cells is 900 feet, but it must be borne in mind that a prisoner may occupy it the 24 hours round, and from year's end to year's end; where other conditions present themselves, the same space is not necessary. At Portland, for example, which is for public works, a man is out at labour in the quarries all day, and only sleeps in his cell, which is seven feet long by four feet wide, and about seven feet six inches high; that is a small space, but the door opens into a large corridor or hall; he thus lives in a large space though confined in a small one.

5140. (*Mr. A. S. Stafford.*) Is it a grated door?—No, the ventilation is by openings under and over the door. This is a section of one of the buildings (*handing in the same*).

5141. (*Mr. J. R. Martin.*) In that case the corridor is the ventilating trunk?—Yes; or it may be termed the fresh air chamber.

5142. (*President.*) What are the cubical contents there?—The cubic contents of the cell itself is only about 200 feet, but allowing for the corridor it is about double.

5143. About the same as is allowed to a man in a barrack?—Taking the corridor in, I dare say it is. This sketch is illustrative of the remarks I have made on the ventilation of a barrack room.

5144. Is that a plan which you have drawn up at my request with a division between the beds?—Yes, the plan you suggested is included in the sketch.

5145. Will you explain shortly the mode by which you propose to effect this?—The ventilation of a barrack will be promoted by the rooms being spacious, with windows at each end, but the *comfort* of the individual soldier is better secured by his being associated with a limited number of his comrades, rather than being in a crowd; hence a difficulty. This, however, might be met by making a division in each room with openings through which a free current of air might pass, as shown in the sketch. (*A sketch was handed in and explained to the Commissioners. See App.* LXXIII.) I think it is desirable to have a room large enough for 24 men, but I do not think that they can be very comfortable together, there are disturbing causes, people going in and out, and large numbers do not associate so well together as smaller bodies do.

5146. Do you think that the men complain of their being 24 in a room instead of 12?—I think you can make them more comfortable in the small rooms. These rooms are 45 feet by 25 for 24 men, divided into two rooms, each 22½ feet by 25, capable of containing 12. Each man has thus about 50 superficial feet, and can have a cubic content of 500 feet; 4 feet of space is allowed between the beds, and a compartment is formed by a small partition of corrugated iron between the beds, projecting 4 feet from the wall. It is made 5 feet 6 inches high, and will secure, to a certain extent, some of the decencies of life, and some degree of privacy. During the day, from the room being wide, there will be 14½ feet between the partitions, which will give ample space for a table and benches, or stools, which, on many accounts, would be preferable. As there would not out of 12 men be on an average more than 8 actually in the room (except for sleeping), all would participate in the comfort of the fire; in fact, the barrack room would be the most comfortable place that the soldier could find, which I hold to be an object of primary importance, as the basis on which the other and more important improvement would rest. It is now generally acknowledged that the improvement of the dwellings of the poor is indispensable to give effect to the efforts of the clergy and schools. It is the same with the soldier, his material comfort must be provided for before his self-respect can be sufficiently established to enable him to profit by instruction, and value higher objects.

As regards the means of ventilation and warming, it will be observed that there are in the plan certain flues coloured black and others coloured blue. The former represent openings for the exit of foul air, and the latter corresponding openings for the admission of fresh air. The means of securing fresh warm air for the winter is provided by converting the passages into warm fresh air chambers, from which the rooms will be regularly supplied. The vertical flues, which must be trusted to for the escape of foul air, are situated between the smoke flues; but the entire extracting process would be improved if cast-iron flues could be made to some extent in the upper part of the chimneys, which by the radiation of heat would raise the temperature of the extracting flues. It would not add materially to the expense to reduce the whole ventilation to a system, as at Pentonville, and as I should recommend for a hospital. But when men are much in the outer air, it is not necessary to do more than make provision by flues for natural ventilation, and this plan could be applied to the existing barracks.

5147. Upon that plan would not there be a very great increase in the expense?—I am not aware that there would necessarily be a great increase in the expense. The space with barrack room is only 500 cubic feet.

5148. And the barrack regulation is 450 feet?—I think so; it is a trifling increase; but, after all, the cost of the erection of the barrack occupied by the soldier is only one-fourth of the total cost of the whole establishment, so that any trifling increase in cubical content would be not worth naming if any decided advantage were gained.

5149. (*Mr. J. R. Martin.*) Has your suggestion been carried out practically in the construction of any barrack recently?—I am not aware that it has to any sufficient extent. Openings may have been made near the chimney and carried up, but I am not aware that the number of men that occupy the room, and a proportionate area for each has been taken into account.

5150. Do you think that the ventilation at Pentonville would be sufficient for a hospital?—Yes, more than would be required for a hospital. There is a constant change day and night to the extent of thirty cubic feet per minute for each man.

5151. How do you effect the change?—By the simple and inexpensive means of disposing the flues in such a way as to admit of the extraction of the foul air and the admission of the fresh air. The latter may be warmed to any degree of temperature that may be required.

5152. (*Sir H. K. Storks.*) They are not difficult to manage, are they?—No; nothing can get out of order, and it requires little or no attention. The medical officer occasionally, as he goes his rounds, can apply an anemometer to the foul air flue, and he will know exactly whether the system is working properly. If the ventilation were not in an active state, a fire lighted in the foul air shaft would give an immediate impetus to it.

5153. (*President.*) You very seldom light a fire?—It is seldom required; and the cost of warming and

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ventilation, at Pentonville prison, does not exceed a farthing a cell for 24 hours in winter, and less than that in summer.

5154. You call it very inexpensive, as well as being effectual?—Yes.

5155. Still it is not applicable to a barrack?—The principle could be easily applied to a barrack, or to a hospital; it is proposed to do so at the invalid establishment shortly to be commenced at Woking for convicts.

5156. For the criminal lunatics?—No, for invalids; but the lunatic asylum will probably be warmed and ventilated on the same plan.

5157. Are they in large wards, or how?—Some are in wards; but for others individual separation will be required. The ventilation of each will be provided for by the disposal of flues in the wards or cells, and by uniting them in a horizontal flue in the roof.

5158. (*Sir H. K. Storks.*) Could that system be applied with ease to existing barracks?—There is no doubt it could be applied to most barracks.

5159. (*President.*) You would have to build internal or external flues?—Not so; difficulties of no ordinary kind were presented at Millbank, an old existing prison, in which there were five miles of passages. The warming and ventilation were, however, effected without much expense, and the plan works satisfactorily. I would, however, explain to the Commissioners a very simple plan, which was adopted with success at Dartmoor. Across the large rooms in the prison, there were girders, by the side of which, lath and plaster flues, of 18 inches wide and 15 inches deep, were constructed. These flues went to the outer air at both extremities; and the under side of the flue being perforated, when the wind was blowing on one side, the flue being divided in the centre, the fresh air descended into the room, and the foul air was forced out on the opposite side; when the wind changed, the current was reversed.

5160. It goes out to leeward, and comes in from windward?—Yes. (*Another plan was explained to the Commissioners.*)

5161. What is the mode of ventilation that you would recommend, looking at the expense, among other things, if we wanted to create thorough ventilation in the existing barracks; would you take a lath and plaster flue, as one method?—Yes, that is one plan; another would be, to construct a kind of cornice of lath and plaster, and carry it out to the outer air on both sides; one half might admit the fresh air, and the other let out the foul air; a similar flue might be constructed in the angles of a room and be carried up into the roof, there to be discharged. An arrangement of this kind would cost but little and would materially assist in getting rid of the foul air.

5162. (*Sir J. Clark.*) By a current of air?—Yes.

5163. (*President.*) That would be inexpensive?—Yes.

5164. Generally speaking, your impression is, that barracks have no sufficient means of ventilation?—I feel satisfied of it. In connection with the health of troops, I would also mention the importance of making some better provision for drying their clothes, when they accidentally get wet. A drying closet should be attached to each barrack for this purpose.

5165. (*Sir H. K. Storks.*) Are you consulted in the construction of military prisons?—Yes.

5166. Suppose that a military prison is ordered to be built abroad, is the plan sent home to you?—Always. A circular memorandum on construction was promulgated, in order to secure uniformity.

5167. Since what time have they sent home plans for military prisons?—Since the commencement. The paper I referred to was published in 1844, I think; and the whole of the military prisons are erected, as far as may be, on a regular system, both at home and abroad.

5168. Do you remember the military prison at the Mauritius; was the plan of that prison referred to you?—I believe so.

5169. Was the ventilation adapted to the climate?—Yes; but the Mauritius being a warm climate, the arrangements must have differed from those I have explained. These sketches show the method in which a military prison, in a warm climate, might be ventilated. (*Handing in a sketch.*)

5170. (*President.*) You do not think that it would be safe in any case to trust merely to ventilation by windows?—No; the windows cannot be used in winter time. Louvre panes might be introduced or perforated glass, but either of them would be likely to make the men feel the inconvenience of the cold.

5171. Any ventilation would make them cold if the air is not heated?—Yes; it is on that account that I recommend that the air in the passages should be warmed. It is indispensable for any regular system of ventilation that the means should exist of warming the air in winter time.

5172. I asked you to make a plan of a barrack with those bulkheads dividing each bed?—Yes; they are shown on the sketch I gave in.

5173. Would that interfere with the ventilation?—Not the least.

5174. Why not?—Because there is an extracting flue directly under the bed, and another over it.

5175. You do not mean the bulkhead to go down to the ground?—No; I should recommend a space underneath each of about five inches to promote cleanliness and allow a free circulation of air

5176. How high do you make it from the ground?—I think 5 feet 6 inches would be sufficient.

5177. As I understand you the bed is 6 feet long?—Yes.

5178. Anybody looking along could see whether a man was in bed?—Yes.

5179. But it would have the effect of dividing each man from his neighbour?—Yes; and as regards ventilation there is a flue near the floor, and corresponding admissions for the fresh air from the passage.

5180. And there are flues going out under the bed?—Yes; and I think a small bulkhead would be an improvement in barracks, as it would give a degree of privacy.

5181. What is the cost of those bulkheads?—Not much.

5182. Yours, that go right round and enclose the cell, are expensive?—They are rather expensive from being made of corrugated iron.

5183. Could you make a thing of that sort for 10*s.* or 1*l.*?—A partition of corrugated iron would probably cost about 1*s.* a foot super., which would be 20*s.* each for those which appear in the plan.

5184. In your recollection has there been any improvement in the matter of urinals, lavatories, privies, and things of that sort in the barracks?—The lavatories have been added, I think, to most barracks, and I hope the privies have been improved.

5185. There are some, I believe, which have none? That I am not aware of; it is so long since I have had anything to do with barracks.

5186. With regard to urinals, they still use urine tubs in the wards?—Yes, I believe so, in the barrack rooms.

5187. (*Sir H. K. Storks.*) How do they manage in the prisons. Is there a urine tub in each cell?—Each man has a chamber pot. In some of the cells where the men are likely to be violent, gutta percha chamber pots have been introduced.

5188. (*President.*) Are they as free from smell as crockery?—Yes; when kept clean.

5189. They are less offensive than the wooden tub?—Yes.

5190. (*Mr. J. R. Martin.*) That is the worst of all?—Yes.

5191. (*President.*) Your men are all separate in the prison?—Yes; generally all are separated at night.

5192. (*Sir H. K. Storks.*) You have never so many men in one room as in the barrack room?—Yes; at Dartmoor there are. Some are epileptic or not capable of being left alone. It is partly a hospital and partly a prison, but the principle that we endeavour

to carry out is the entire separation of prisoners at night, when they are not under effective control.

5193. (*President.*) What is your reason—take Portland.—You have to look after those men and keep them in health, to execute certain public works for the government. Other engineers build barracks to keep soldiers in perfect health to do service for the government. How is it, that in the one case a man sleeps in a fœtid atmosphere, and in the other you give him a pure one?—I do not think that the subject has been sufficiently considered in respect to the barracks. It has been lost sight of. It is the same in a private house—it is not the business of the architect or the builder to provide for ventilation; flues are provided for the smoke, and generally that is all that is considered essential. It was only when it became so indispensable to the carrying out of the Act of the 2 & 3 of Victoria, as to the separate confinement of the prisoner for long periods, that my attention was so strongly directed to it.

5194 (*Mr. J. R. Martin.*) The question was then forced upon your attention?—Yes, in this way. I was held responsible by the Secretary of State for building a prison at Pentonville, which was to be a model, and the inspector who had to certify the cells laid down the conditions respecting the amount of ventilation.

5195. (*Sir H. K. Storks.*) Is the health of the prisoners generally very good?—Yes, very good indeed.

5196. (*President.*) Are your admissions per thousand to the hospital less than in the army?—That I do not know—there are many depressing influences in imprisonment which lower the condition of a man, and render him liable to general failure of health. It is a matter of medical experience, that a prisoner sitting in a cell with little or nothing to do, requires more diet and nutriment than a man who is actively employed at liberty.

5197. (*Sir H. K. Storks.*) Are you aware that in tropical climates the health of the soldiers in prison under sentence of court-martial is bad?—No, it has never been brought officially before me. The returns are all sent to the Secretary-of-State for War.

5198. (*Mr. J. R. Martin.*) Have you heard that many persons on being released from military prisons in the East Indies have come out in a state of idiotcy?—I am not aware.

5199. (*President.*) You do your utmost, by diet and ventilation, and general comfort, to keep a man in health?—Yes.

5200. You trust for punishment to the most wearisome description of work?—Also to the lengthened period of confinement Whatever be the comforts given to a man in prison, they are not valued in comparison with liberty—therefore so far all confinement operates as a punishment.

5201. The labour that you give to a soldier in a military prison is of the most wearisome description?—About three hours a day is devoted to purely penal labour. It was held to be an object to have the imprisonment as short as possible, so as not to lose the service of the soldier, and to have it as severe as was proper in order to deter others from crime.

5202. (*Mr. A. S. Stafford.*) Do you find greater or less difficulty in managing military prisoners than others?—There is but little difficulty in either case, when the men are treated justly and with due consideration. The number of prison offences will be found in the statistics of the military prisons of which a report is published every year, and they are a certain test of discipline.

5203. (*President.*) Have you greater means of enforcing discipline in military prisons than in civil prisons?—No; I think not.

5204. Have you resorted to corporal punishment?—Yes, but to a very limited extent indeed.

5205. (*Mr. A. S. Stafford.*) Is there the same proportion of corporal punishment for the military prisoner as for the civil prisoner?—I never compared the two, but I think it is less with military prisoners. Among the convicts we have to deal with, the worst of characters, some among whom can only be subdued by force, the great body of them, however, are managed chiefly by moral means.

5206. (*President.*) Moral means and stone walls?—So far as preventing escape, stone walls are necessary.

5207. (*Sir H. K. Storks.*) Do you stop their food?—To a very trifling extent, that is one of the punishments.

5208. (*Mr. J. R. Martin.*) Any interference with their rations would tend to deteriorate their health without improving their morals?—Yes, on opening Portland, a diet which the medical men considered sufficient to keep them in health was tried, but after a few months it was found that the men could not get through their daily labour, and it was necessary to give them an extra ounce of meat and a little additional bread. At Pentonville the depression at first was so great that the medical commissioners most anxiously considered the question of diet. It is extremely liberal, and the men would fail in health if it were not.

5209. (*President.*) In the military prisons do the men come out having lost weight?—On the whole they lose weight, but they generally are discharged in good health.

5210. And fit to resume their duties?—Yes.

5211. What is their ration as compared with what they get when out of prison?—The diet is altogether a different kind to that they are accustomed to. It was considered an object so to establish it. The prison diet is chiefly composed of American corn meal made into a pudding; it is a good wholesome dinner, but not a very palatable one.

5212. (*Mr. T. Alexander.*) Do they get meat occasionally?—Only on Sunday for the first class.

5213. (*Mr. J. R. Martin.*) Is the diet varied?—No, it is a very uniform diet. The sentences at the military prisons average about 115 days. The medical officer at all times can alter the diet in any particular case, but at the end of 84 days there is a little increase allowed generally.

5214. (*President.*) You are quite satisfied that they are dieted sufficiently for health?—Yes; the diet was reduced about two years ago, from being found more than was necessary.

5215. But so far as a man's comfort is concerned he is really better provided for than in barracks?—Yes, I have no doubt that his material comforts are better provided for.

5216. How often do they wash in the prison?—Every day, and their feet once a week.

5217. How often do they bathe?—They are required by the prison rules to bathe once a week.

5218. What means of ablution have they?—In most prisons every man has a jug of water and a washing-basin in his own cell. In some there are places set apart for washing.

5219. (*Sir H. K. Storks.*) Does he bathe in a bath or tub?—In some prisons they have large baths, in which they can lie down; in others, to economize the water, and secure the object of letting each man have fresh water in his bath, a smaller kind is used, in which they sit down and wash themselves with a large square of flannel.

5220. A hip bath?—Yes.

5221.—(*Mr. T. Alexander.*) In those respects they are much better off than soldiers in barracks?—Yes, I fear they are; but personal cleanliness is, on all accounts, so important, that great attention is paid to it. I think it of importance that there should be afforded means of bathing in barracks.

5222. (*President.*) Do you propose in your plan to make any provision for quarters for married men?—We have built very largely at all the convict prisons for the warders, who are principally discharged serjeants, generally with families, and I have adopted several plans for securing them comfortable quarters.

5223. (*Mr. J. R. Martin.*) Are they in the form of lodging houses detached from the buildings?—

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They are all detached, in various forms suitable to the localities, and consist generally of a kitchen, scullery, and two bed-rooms.

5224. In the improved barracks, do you contemplate making quarters for the men who marry with leave?—I think it of great importance to make a proper provision for married soldiers, but I should have the quarters at a distance. The introduction of women and children into a barrack is very objectionable.

5225. (*Sir H. K. Storks.*) Would you approve of detached buildings in the rear of the barracks?—Yes, but I would have them at some distance, not less than a few hundred yards.

5226. (*President.*) Have you seen the Guards' arrangement?—I have not.

5227. Looking at the treatment of the troops that has come under your observation, what should you say is the main cause of the great excess of mortality among soldiers as compared with men of similar age in other classes of life?—There is perhaps something in the duties, that is, the exposure of a sentry at night; but I should attribute it chiefly to drunkenness, and those habits of dissipation into which they fall, and the want of ventilation in the barrack rooms.

5228. Referring to the night duty, that does not apply to the cavalry, and yet the mortality in the cavalry is considerably in excess?—The cavalry frequently sleep over the stables, and foul air is thus introduced, in addition to the want of ventilation.

5229. The same applies to the artillery, does it not?—Yes, generally speaking.

5230. With regard to drunkenness, is there more drunkenness among soldiers than among the same class of men in civil life?—Excluding desertions, almost all the crime of the army is, either directly or indirectly, traceable to drunkenness, and absence without leave, which is connected with it.

5231. (*Sir H. K. Storks.*) Do you think, judging from the number of men committed to prison, that drunkenness has increased in the army?—I believe it has to a certain extent during the last year, but it is remarkable how the proportions have varied at different stations. Some few years ago the proportion of the crime of drunkenness in Ireland was double what it was in England. In Scotland it was three times what it was in England. In looking for the cause of this distinction it is traceable, as I have understood, to the operation of the Act which facilitated the distillation of whiskey.

5232. (*Mr. J. R. Martin.*) There is this difficulty in making a comparison, that in the army you can ascertain the cause of crime to be drunkenness?—Yes.

5233. But in civil life you cannot ascertain that?—Not with the same accuracy. I think, however, that in an equal number of men there would be found more drunkenness in the army.

5234. Would it be an advantage to have at head quarters in London models and plans of the most approved barracks and hospitals, to be regarded as patterns for them, or until better plans should be discovered?—I think it would be of the greatest advantage.

5235. You use such plans and models, do you not, for military works?—Yes; the principles on which military works are generally constructed are recognised; but the application of the principle varies more than it would in a barrack.

5236. The same would apply to barrack hospitals?—I think that if a model barrack or hospital were once erected, the principle and detail of which were fully approved, there need not be any deviation from it.

5237. It would remain as an approved fact?—Yes.

5238. Had such models and plans existed it would have saved many blunders which have been committed in the erection of barracks and hospitals?—I do not know how that may be; it is long since I have had anything to do with such works.

5239. (*President.*) You say that drunkenness you look upon as one of the largest causes of crime, and you think that drunkenness is greater in the soldier than in the same classes of men in civil life?—Yes, I think so.

5240. You take every offence of drunkenness committed by the soldier more or less coming under the cognizance of the superior authorities, but that is not the case in civil life?—No, it is not; but I judge from what one sees about the streets of Chatham, Portsmouth, and other places.

5241. Do you think that if every man that you saw drunk was dressed as conspicuously as the soldier you would not see as many?—I think not. You may go through Chatham or Portsmouth at all hours of the day and night and you will see but few civilians drunk.

5242. On a Saturday night, in a rural district, do you not think that as many men go home drunk?—Yes; the beer-shop undoubtedly has its baneful attractions for that class.

5243. And those are the classes, are they not, from which the soldier comes?—They are.

5244. Suppose that there was such a mass of drunkenness in the army, would it not be shown in the causes of mortality in the army; would not they die more of liver diseases and not of pulmonary diseases?—I cannot decide that point; but I cannot doubt that drunkenness has a very prejudicial influence upon the health of the army.

5245. (*Mr. A. S. Stafford.*) The proportion of military at Chatham is very great compared with the civil inhabitants of the same age and rank in life?—I think the civil inhabitants would out-number the soldiers. There is a large number in the dockyards, independent of the inhabitants of those towns. I scarcely think that the garrison at Chatham would out-number the inhabitants.

5246. (*President.*) You make your comparison with the whole population of all ages in civil life; you do not make your comparison with men of the same class, adult males from 18 to 38?—My opinion is rather formed upon the general admission of all commanding officers than from my own observation; it is some time since I have been closely connected with the service.

5247. Commanding officers are the men who feel most interested in whatever may be the causes of crime; but if you went to the clergyman of the parish would he not tell you the same thing, that the bane of his parish was drunkenness?—I think he might.

5248. Putting that cause aside, would you put next to that the want of ventilation?—The want of ventilation cannot fail to have a prejudicial effect. A man is in his barrack-room from eight to ten hours out of the twenty-four, and that is a large proportion of his time. Any one who has to go round when the men are in bed can speak most painfully to the foul state of the atmosphere in any barrack room; it is quite unbearable.

5249. Your remedy would be in improving the barrack accommodation?—That is one very important point. I believe that making the soldier comfortable in his quarters is indispensable as the basis of all the training by which the moral standard of the army may be raised.

5250. You include in that facilities for reading rooms, and so on?—All that has been done in this direction is admirable; but I think a man would be more inclined to read in his room if he had books and had facilities for doing so, than go to a separate room provided for the purpose.

5251. (*Sir J. Clark.*) You think that the moral effect would be equal to the physical?—Yes, the more the condition of the soldier is improved, and the more the public become satisfied that he is well cared for in

every respect, the sooner will a better class of recruits present themselves.

5252. (*President.*) They would be the same class, but they would be the best ?—Yes, the best of the class.

5253. (*Mr. J. K. Martin.*) The want of means of recreation and amusement is also a well-founded complaint ?—The means of recreation have been much attended to of late years. Racket courts have been erected in many barracks, foot-ball, cricket, and other games have been encouraged. These efforts, and the instruction of the soldier, will tend to raise the moral standard of the army ; but I would now particularly allude to increased instruction in moral and religious duties. I have always been greatly struck with the deficiency in the amount of spiritual instruction which is afforded to the army.

5254. (*Sir H. K. Storks.*) Have you not been very much struck with the readiness of the soldier to profit by it ?—That has always shown itself where any means have been afforded to them. The subject has forced itself upon my attention particularly, from being aware of the great care taken by the legislature and all connected with prisoners, to afford to all criminals ample instruction in moral and religious duties. Magistrates are compelled by law to appoint to the smallest prison a chaplain, who shall devote the whole of his time to the prisoners, and to a considerable extent the range of his duties are laid down by an Act of the 4th Geo. 4. cap. 64. In the 30th section it is provided that every chaplain appointed to a gaol, "shall, on every Sunday, and on Christmas-day, and Good Friday, perform the appointed morning and evening services of the Church of England, and preach at such time or times, between the hours of nine and five in the day, as shall be required by the rules and regulations to be made as directed by this Act ; and shall catechise and instruct such prisoners as may be willing to receive instruction, and shall likewise visit the prison on such other days, and perform such other duties as shall be required by the rules and regulations to be made as directed by this Act, and shall administer the holy sacrament of the Lord's supper to such prisoners as shall be desirous, and such chaplain may deem to be in a proper state of mind to receive the same ; and such chaplain shall also frequently visit every room and cell in the prison occupied by prisoners, and shall direct such books to be distributed and read, and such lessons to be taught in such prison, as he may deem proper for the religious and moral instruction of the prisoners therein."

5255. (*President.*) Is it fair to argue from the number of chaplains employed per head in prisons to the number that are requisite for men in freedom ?—Perhaps not, but I would illustrate my meaning by reference to the staff for instruction in some of the Government prisons. At Portland, with 1520 convicts, there are 2 chaplains, 1 scripture reader, and 6 schoolmasters ; at Pentonville, with 560 prisoners, there are 2 chaplains, and 3 schoolmasters, &c., I can state that the time of all is most fully and most usefully applied. In my view the defect is not only in the limited number of army chaplains, but in their being appointed to garrisons, and not specially to regiments. They cannot under such circumstances, have the same amount of individual communication with the men which we find of such great importance among convicts.

5256. Still the number that you quote in the prisons is greater than the number given by the parochial system for the general population ?—It undoubtedly is so, but prisoners are all adults, and the census takes in the population of all ages.

5257. (*Sir H. K. Storks.*) It is supposed that men in gaol require more spiritual consolation, is it not ? —Yes ; but I think it will appear there does not exist sufficient provision in the army to ensure any great amount of instruction. If a chaplain were appointed to a particular regiment, he would go among the men, become interested in their welfare, give them advice ; and most certainly, if he were a judicious and earnest man, would exercise a great influence for good.

5258. (*Mr. A. S. Stafford.*) You do not think that the relation between the chaplain and the soldier is satisfactory in the army ?—I think not.

5259. (*President.*) You think that it is not intimate enough ?—That has long been my opinion.

5260. (*Mr. T. Alexander.*) Is there not great room for improvement as to the kitchens in the barracks ? —I think so.

5261. Do you not think that opportunities ought to be given to the men to vary their diet by roasting and baking ?—There might be an established variety of diet on certain days ; but it would lead to irregularities to allow the men to do it themselves ; it should be settled by regulation or order.

5262. Now they cannot do it ?—It would be a great advantage to afford facilities for a variety of diet, and would conduce to health, I think.

5263. (*President.*) You mentioned that you would have workshops attached to the barracks for the soldiers ?—I think it would be found of advantage, for the more the soldier is *usefully* employed, the better he would be for it in almost all respects.

5264. He would gain when he left the army, because he had learnt a trade ?—Yes ; but chiefly he would gain in having acquired habits of industry instead of habits of idleness.

5265. Could he practise the trade for the good of the service ?—Certainly.

5266. In what way ?—A great proportion of the repairs of the barracks might be done by military artificers, if carpenters' and other workshops were attached to barracks.

5267. (*Sir H. K. Storks.*) But there would not be men enough to do the duty ?—The working parties would not be numerous, and might be taken by roster.

5268. You must have parades to drill the men ?— Yes, they would not be excused from some of the parades ; but when a man was once fully drilled, he might go out with his regiment once or twice a week, and at other times be usefully employed as a carpenter or smith.

5269. (*President.*) In general hospitals there is great complaint as to the difficulty of getting small repairs executed, owing to the necessity of corresponding with other departments to get authority for them. Would it be a saving to have attached to a hospital, two or three men, carpenters, to execute the small current works of the hospital ?—I think it would be found convenient for small repairs.

5270. In your prisons what do you do ?—A foreman of works is attached to each prison, who has one or two artificers under him. He from time to time submits requisitions for the repairs that are necessary, together with a demand for the materials that are required ; those requisitions being approved, he obtains the materials from a contractor, and executes the repairs with the men under him ; in some cases obtaining an additional hand.

5271. If the work passes his means, then he makes a contract ?—Annual contracts are entered into by me.

5272. For small works are you satisfied that they can be executed cheaper in that way than if a separate contract was made for them ?—Yes, if the artificers are good workmen, and properly looked after by the foreman. It is his duty to see that their time is properly applied.

5273. (*Mr. J. R. Martin.*) In regard to the treatment of the soldier, you are of opinion that he should be allowed to do for himself everything that he can do without injury to his health or discipline in pursuing his trade for his own benefit ?—No, not for his own benefit, he should be employed for the benefit of the public and be paid for it. It would lead to much irregularity to allow of their going to work for other people on their own account; that would demoralize the soldier.

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5274. (*President.*) You would convert a certain number of men into something like sappers?—It would be an approximation to the system pursued in regard to the training and employment of the engineers.

5275. (*Mr. T. Alexander.*) With a view to render a battalion complete in itself?—Yes; if the men were usefully employed, to a certain extent, it would have a good effect, and they would acquire industrious habits.

The witness withdrew.

Sir John Hall, K.C.B.

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Sir John Hall, K.C.B., examined.

5276. (*President.*) At what time did you join the army in the East as principal medical officer?—In June 1854.

5277. You had been, I believe, already in Bulgaria before you joined the army in the Crimea?—When I joined the army it was embarking for Varna. The light division had gone; the others were still at Scutari and at Gallipoli.

5278. What were the medical arrangements when you arrived in Bulgaria as to the distribution of field equipments, and so on?—A certain proportion of equipment had been given to the different regiments when they went up to Varna, and they were establishing a general hospital at Scutari when I arrived in Turkey.

5279. (*Sir H. K. Storks.*) Where did you join?—At Scutari, on the 17th of June, 1854.

5280. Did you join Lord Raglan's head-quarters?—Yes; he was there then.

5281. (*President.*) Was there a general hospital at Varna?—No, it had not been opened; it was opened afterwards, when I went up there.

5282. What arrangements did you make in the way of provision for the sick?—At Varna one half of a large Turkish barrack was given over to the English, and the other half was given over to the French; and we took measures to get it cleaned and ventilated. The stores were all accumulated there; part of the stores I found lying on the wharf when I landed, marked with the hospital mark, without anybody knowing anything about them.

5283. Did you find a sufficient supply of medicine and medical comforts at that time?—Yes.

5284. From the time that you arrived in Bulgaria till the departure of the army on the expedition, what did you consider to be the deficiencies in the medical preparations,—had you men enough then?—There were many difficulties. We had no ambulance. We started on the campaign without the necessary machinery for a general hospital. We had no orderlies nor any other servants. We were obliged to get them as we could from the ranks, and that was done with great difficulty. They were quite ignorant of everything connected with a hospital, and when we had got them a little initiated, the commanding officers very frequently removed them, and we had the same process to go over again with others.

5285. That has been remedied by the creation since that time of a permanent hospital corps?—Yes; at first they sent us out some ambulance men, old drunken pensioners that we could make nothing of.

5286. They were not sent out to be used as hospital orderlies, were they?—Yes, part of them as hospital orderlies, and the others were to be employed as drivers for the waggons. The order that came out was, that they were to be employed in the hospitals.

5287. Will you state what you consider to be the proper field equipment of a battalion on active service?—I think each battalion ought to have a certain equipment; it must necessarily be limited if the army is moving. The army before Sebastopol was exceptional; but I think it would not be advisable for a regiment to have an equipment for more than 20 men. They would require one cart to carry what comforts they wanted, and about 20 cork mattresses and blankets. They ought also to have a kind of Irish car, to pick up the men who drop behind, and to carry them on the line of march; and that should be provided with 10 or 12 canvas bearers in case of having wounded men. They ought also to have a certain proportion of comforts, such as wine, brandy, arrowroot, and essence of beef, &c. (*Vide App. No.* XLIX.)

5288. Do you think that would be a sufficient supply in point of number?—Yes; there ought to be with each division a divisional establishment.

5289. There is no brigade establishment?—If a brigade were detached you would send an establishment with it.

5290. You have the general hospitals in the rear if you move?—Yes; and you would have your regimental establishments, which must be limited; and your divisional establishments, which would maintain the sick, perhaps, for a day or two longer; then your general hospitals in the rear, to which the men must be sent by every opportunity.

5291. (*Sir H. K. Storks.*) Was not that course adopted at the Cape of Good Hope?—Yes, we used there a very simple plan; we got a cartel, an elastic platform on which the Boer's wives travel in their waggons, put on the top of the load in a certain number of commissariat long waggons, and when the waggons were emptied the cartel was slung, and formed an efficient and inexpensive ambulance waggon.

5292. (*Mr. J. R. Martin.*) You would also have a divisional hospital, but more for temporary purposes?—That must move too. You would have a divisional hospital perhaps for 150 men.

5293. That would be eventually subservient to the purposes of the general hospital?—Yes; you must send the men to the rear; but I think that proper ambulance transport ought always to be with the army for about five per cent., and that, with the assistance of the general transport, would be quite sufficient.

5294. (*Sir J. Clark.*) What plan did you adopt for conveying the sick from the front at Sebastopol to Balaklava?—Twelve waggons arrived from Varna on the 12th of October, and they were sufficient, so long as the roads remained good, to relieve the hospitals in front and take the sick down to Balaklava.

5295. (*President.*) Were they not too heavy?—Yes; when the wet weather set in, but that was not peculiar to them, because the ammunition waggons could not travel without many horses, owing to the deep and tenacious nature of the soil.

5296. It was not so much a fault in the construction of the waggons?—No; but I think it was too heavy for general purposes. If I had any voice in equipping the army I would not have them made so heavy. Afterwards when the waggons broke down the French lent us their ambulance mules, and I recommended that the cavalry horses should be employed as a last resource.

5297. (*Sir J. Clark.*) Do you think that the French ambulance system is superior to ours?—I think that the litier and the cacolet are very good; they can travel very well where wheeled carriages cannot.

5298. Those that we have now are very heavy, are they not?—Yes.

5299. Have they been at all improved?—Yes; it has been attempted to improve them, but I think that the alteration is rather a disadvantage. In place of having what the French have for the relief of a seriously wounded man, our litier is made a fixture to the pack saddle, and it is very difficult to lift a man up to it. The French one unhooks and they put it down on the ground, and two men raise up the wounded

man and hook it to the saddle. I think the alteration in ours is not an improvement.

5300. (*Mr. T. Alexander.*) And that would also prevent you from carrying up supplies?—Yes; you must take the litier off for that.

5301. (*Mr. J. R. Martin.*) In the divisional hospitals the men would be attended by regimental surgeons, would they not?—You would have either a staff surgeon, or a deputy inspector in charge of a divisional hospital; and it would be, of course, attended by the medical men from the different regiments of the division.

5302. (*Dr. A. Smith.*) Did not the men who were severely wounded complain much of the jolting of the cacolets?—Yes; wounded men will complain of every kind of conveyance.

5303. Did they not complain more of the litiers than of the waggons?—No. You can hardly make any springs that will be quite easy; the best springs were those of Fuller's patent that came out afterwards, but whether they would have stood the wear and tear of service or not is doubtful; these waggons had India rubber springs.

5304. (*Mr. A. S. Stafford.*) Nothing could be worse than the arabas?—No; we did not use them much.

5305. (*Dr. A. Smith.*) Although the litier is objectionable in some respects, yet under the circumstances in which your men were placed was it not the best conveyance?—Yes; you can use it where wheeled carriages cannot go; you can take it on the field and get your men away. The canvas bearer is easier, but you cannot transport men any distance by it.

5306. You would not trust to either, exclusively?—No; you would require waggons.

5307. Do you like four wheels, or two best?—Four decidedly; we had two-wheeled carts, and they were upset nearly every time they went out, owing to the negligence or inexperience of the drivers; and Mr. Guthrie devised a plan of slinging a man to the roof, which would have been dangerous.

5308. (*President.*) As the general hospitals are formed at the base of operations, and as, generally speaking, with us, that would be on the sea coast, what should be the regulations under which those hospitals should be formed?—That would rest with the principal medical officer; he would look out for the most eligible buildings he could get, free from sanitary defects.

5309. What powers would he have, as to adding to a building, or altering it, which might be necessary, to some extent?—Hitherto that power has been very much limited. You must go such a round-about way, writing to the quartermaster-general, and then the quartermaster-general writing to the engineer department.

5310. Do you think that there might be a shorter way of doing these things?—If authority was given to the principal medical officer to communicate directly with the engineer department, after submitting the matter to the Commander in-Chief, I think that would be better.

5311. But the Commander-in-Chief might be miles away, and days away?—It would hardly be so where you are going to establish a general hospital; you would not commence a campaign without some provision of that kind ready made.

5312. Would it not be a relief to head-quarters, both to the commanding officer and the principal medical officer, if the general hospital, at the base of operations, were taken from under their charge and put upon the footing of the establishment at Chatham, and were made a general hospital belonging to England?—I should think not; suppose you had to move it, your operations may alter, as ours did, and we had to change the base of our operations.

5313. (*Mr. J. R. Martin.*) In the Peninsula the army was stationary?—Because they were on one line of operations, but you might change your base of operations altogether.

5314. (*President.*) Scutari might have been said to be the base of operations, to a great degree?—Yes; it began at Gallipoli; then it went to Scutari; and afterwards it was supposed that our base would be at Varna.

5315. At Scutari, the hospitals were far beyond your reach, or Lord Raglan's reach?—Yes; but still they were under his direct command; the commandant was under his command.

5316. He might have been glad to get rid of the responsibility of a hospital that he could know nothing about?—Yes.

5317. (*Sir H. K. Storks.*) During the last 18 months of the army being in the east, no reference was ever made to Lord Raglan, or to the Commander-in-Chief of the forces?—I do not know that.

5318. (*Mr. J. R. Martin.*) As in most cases of British expeditions the base of operations is the seaboard, do you not think that it would be an advantage to empty the large general hospitals, such as those which the Duke of Wellington established, and send the men off in ships, as often as they could be sent, and so to obviate the great evils that were then complained of, as in all our wars, the accumulation of men in general hospitals?—There is no doubt of it; but that system was virtually adopted in the Crimea; we latterly sent the men home every week.

5319. (*President.*) With regard to all the machinery necessary for the selection of a hospital, do you think that is satisfactory, and that the principal medical officer is the person who selects the site?—Yes, he gets permission of course; the general officer sanctions it.

5320. For water supply and alterations in buildings, the change that you would suggest is this, that the principal medical officer should be put in more immediate communication with the engineer?—Yes, that he should certainly have more direct means of getting a thing done. I have written numerous letters of one kind or another when I have wanted particular things done. I had first to write to General Airey, and then he had to write to the engineer.

5321. Still there must be the sanction of the Commander-in-Chief?—Yes, the Commander-in-Chief must be consulted, and give his sanction. The principal medical officer would communicate with the quartermaster-general, according to the present system, and he would take the Commander-in-Chief's pleasure upon the matter.

5322. Having obtained that, then you think he ought to deal directly with the engineer?—Yes, that would be an improvement upon the present system; for according to the routine of the service, certain things must go through certain channels.

5323. Practically are the medical officers consulted on such matters as the selection of sites for hospitals, and sites for camps?—Not always, indeed very seldom.

5324. Is it a matter of regulation that they should be so consulted?—I think not, but I think it ought to be so.

5325. (*Sir H. K. Storks.*) You have been in the field elsewhere?—Yes.

5326. Were you ever consulted about the site of a camp?—Yes, always.

5327. (*Mr. J. R. Martin.*) Where was that?—At the Cape of Good Hope. I have been in India, and when I was there they were building barracks, and there was not a single thing done without consulting me. They were going to build a large barrack at Poonah, and every plan was submitted to me first.

5328. But it is nowhere a matter of standing order or regulation?—I do not know, but at that time there was no alteration of any kind, or anything connected with the Queen's troops, where the health and the comfort of the men were concerned, that Colonel Holland, quartermaster-general of the Bombay army, did not consult me about.

5329. (*Sir H. K. Storks.*) At the Cape of Good Hope you were always consulted?—Yes.

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5330. (*Sir J. Clark.*) Were you consulted with regard to the various influences that might affect the health of the army in Bulgaria?—No, but I made strong remonstrances myself; I visited the different camps, I found that some of them were very objectionably placed; and in speaking to Lord Raglan upon the subject, he begged me to write to him upon it, which I did.

5331. (*President.*) Could you put in any statement of that kind?—Yes.

5332. (*Mr. J. R. Martin.*) Was any change made in consequence of your representation?—It was submitted for the consideration of the general officers, and Lord Raglan showed me the answers that he had received, and certainly it was not approved of.

5333. You mean the general officers of divisions?—Yes.

5334. (*President.*) They did not believe in the danger that you pointed out?—No; they scouted it.

5335. (*Sir J. Clark.*) Do you not consider it of the greatest importance to the efficiency of an army in the field that good sites should be selected for the camps?—Most unquestionably.

5336. Did it not happen, after the battle of the Alma, that our troops were encamped on ground which the Russians had left in a filthy state?—Yes; but that was a matter of necessity, and accidental; the latrines were very bad.

5337. If a medical man had been consulted, would he not have tried to get them removed?—A medical man ought to be consulted in such matters.

5338. (*President.*) You thought it your duty as principal medical officer to make the remonstrances that you have referred to?—Yes.

5339. Do you suppose that the divisional medical officers feel that their position gives them authority to do so?—They ought certainly to point out to the general officer commanding anything that appears to them objectionable. I think that the camp at Devna was the worst selected camp that I ever saw.

5340. Practically do you think that they do so or not?—Some do, and some do not.

5341. Do you suppose that the reason of that is that they are not very well received?—Perhaps so; military men do not often attend to the recommendations of medical officers.

5342. (*Sir H. K. Storks.*) But that is no reason why they should not make a representation?—No.

5343. (*President.*) Ought it not to be made a matter of regulation that the medical officer should make such representations in writing?—Yes; I think that would be a very good regulation, and that the general officer should take the opinion of the principal medical officer in writing or otherwise. It would be better for his own satisfaction to write, and then the general officer might adopt it or not. There might be strategetic reasons why he did not.

5344. Would not the fact of the representation being made in writing give greater security for its adoption if it were a suitable recommendation?—Yes; I recollect that they commenced building huts just going into Balaklava, which I protested against in the strongest way I could.

5345. (*Mr. A. S. Stafford.*) Why?—Because they were put between a perpendicular rock and a graveyard just abandoned. This was just at the entrance into Balaklava, on the right-hand side, and when they commenced the huts I wrote a letter to General Airey and protested against it, but they were proceeded with. The site was most objectionable, for it was just at the head of the harbour close to a Turkish burial-ground, filled and actually steaming with the dead, which were imperfectly covered, and just behind it was a perpendicular rock; and the consequence was that shortly after, it was occupied by the Coldstream Guards, and the men had spotted typhus fever, and I then insisted upon its being abandoned.

5346. Was that on the right of the road?—No; on the left as you went out of Balaklava under the rock.

5347. (*Sir J. Clark.*) Might not the health of the army have been much more preserved than it was in Bulgaria if the medical men had been consulted?—I should say so; I would have advised, for instance, that the men should have been encamped on the Galata heights instead of on the banks of the lake. Where they were encamped, it was said, had formed the pest burial-ground of the Russians in 1828 and 1829.

5348. (*Mr. J. R. Martin.*) There was plenty of room on the table lands on the higher grounds?—Yes.

5349. (*Sir J. Clark.*) Is it your opinion that the foundation of the bad health suffered by the men in the Crimea was laid when the army was in Bulgaria?—The health of the men was very much shaken in Bulgaria; we had cholera there.

5350. (*Mr. J. R. Martin.*) And fever and diarrhœa?—Not so much fever, but a good deal of diarrhœa; some of the camps were very injudiciously chosen.

5351. (*President.*) The men were very much weakened in health while in Bulgaria?—Yes; and they were unable to undergo any fatigue. We had no long marches in the Crimea. The longest march was not more than 12 miles.

5352. Before the troops embarked they showed great weakness in short marches?—Yes.

5353. (*Mr. J. R. Martin.*) They were unable to carry their knapsacks, were they not?—Yes.

5354. (*Sir H. K. Storks.*) Was the weather very hot?—No; it was in the beginning of September.

5355. But the weather had been very hot all the summer?—Yes.

5356. (*Mr. A. S. Stafford.*) Are you of opinion that it is necessary that the principal medical officer attached to an army on service should have early notice of all the intended movements of that army?—Most unquestionably.

5357. Was formal notice given to you on all occasions during the war, to enable you to make all the necessary medical arrangements with satisfaction to yourself and benefit to the sick?—No; I received no intelligence at all that the army was about to embark from Varna. The ships were fitted up, and some had two doctors and some had three, and some had none; some had medicines and some had none. The first intimation that I had of it was from the different divisions bringing in their sick; and I was called upon at once to provide for about 2,000 sick.

5358. (*President.*) But that was at a moment, was it not, when it was desirable that the secret of the expedition should be kept to the very last moment?—I ought not to have been kept in ignorance of the intended movement, being the principal medical officer. It was perfectly well known, and had been the talk in the camp for weeks before. Take, as another instance, the expedition to Kinburn. I got notification of that only the night before it sailed to make my medical arrangements for it, and to appoint a staff of medical officers to accompany an expedition of 5,000 men; I got the official information on the morning of the day they were ordered to embark; and it was just the same when the expedition went to Kertsch.

5359. (*Sir H. K. Storks.*) Official notice of the expedition to Kinburn was given to you the morning that they sailed?—The evening before it embarked, official notice was given to me; the following morning I heard of it in the camp, but that is not the proper channel through which the information should have come to me.

5360. (*Mr. J. R. Martin.*) It was not information upon which you could have acted?—No, but I did what was necessary to be done on it.

5361. (*Sir J. Clark.*) How often did you see the Commander-in-Chief during the time you were in Bulgaria?—Very frequently.

5362. (*Mr. J. R. Martin.*) Did you communicate with him officially?—Yes, particularly after the cholera broke out, when I saw him nearly every day.

5363. (*Sir J. Clark.*) If you had had information of the sailing of the expedition for the Crimea, you could have made better preparations?—Yes, the inconvenience was in the different transports. I made application for the conveyance of 400 tons of medical stores, which were necessary for the expedition, and I think I got four days' notice from the quartermaster-general's department of the ship that was to take them. They had to be brought through the narrow streets of Varna in small country carts, and there were no boats ready to embark them. If Lord Raglan had not told me the name of the vessel, it would have been quite impossible to get them on board. Half the things were on board when I received the notification from the quartermaster-general of the name of the ship.

5364. (*President.*) Had you waggons at Varna?—Yes, 40.

5365. But not sea transport to carry them?—Yes.

5366. (*Mr. A. S. Stafford.*) Then why were they left behind?—I do not know; I spoke to Lord Raglan repeatedly about ambulance conveyance, and begged that he would interfere; he quite agreed with me, as he saw the propriety of it, and an order was given to ship 12 waggons complete on board the "London" transport, but some one, immediately his Lordship had sailed, took upon himself to re-land them, and in doing so the mules and harness were all lost. I think 10 of the waggons were got on shore, and the two that remained came to the Crimea without either mules or harness.

5367. (*Sir J. Clark.*) How were the mules lost?—The weather was boisterous, and they were all drowned in landing, and their harness was lost. Two waggons remained that could not be got on shore.

5368. (*Mr. J. R. Martin.*) It must have been an influential staff officer who gave the order, for no other order would have been obeyed?—I fancy so; Lord Raglan was not there.

5369. (*President.*) But he had given you an order?—Yes; he had ordered them to be embarked.

5370. (*Sir J. Clark.*) What were the diseases that you anticipated when the army arrived in the Crimea?—There was nothing unhealthy in the site of the camp in the Crimea; it was without exception the best site that could have been selected.

5371. Were you not a little afraid of scurvy when the army was put on salt provisions?—That was an after consideration.

5372. (*President.*) Had you a plentiful supply of fresh meat at first?—Yes; there were gardens, and the men got vegetables out of the gardens; and there were plenty of grapes in the vineyards when we first went there.

5373. When scurvy did appear, and when the army were on salt provisions, did you represent to the Commander-in-Chief the necessity of procuring fresh provisions?—Yes, over and over again; I put in numerous letters; I recommended that lime juice should be provided, and in October it was provided and issued to the hospitals.

5374. But no fresh meat was provided?—It could not be obtained when the winter set in, but the necessity for it was represented over and over again.

5375. Do you not believe that such a supply could have been obtained at the time?—That is a question I cannot answer, but I recommended that fresh vegetables should be got, if possible, at whatever cost.

5376. Could you put in a paper containing any representations as to the diet, and so on?—Yes.

5377. (*Sir J. Clark.*) Are you aware that raw coffee was served to the army?—Yes.

5378. Did you represent the inutility of the raw coffee, and the impossibility of the men using it?—I did not, for raw coffee was served out to the men at the Cape.

5379. (*Sir H. K. Storks.*) But you had plenty of fuel at the Cape?—Yes; but sometimes it was cow-dung.

5380. (*Sir J. Clark.*) Might you not have inquired whether tea was in store at the time?—Yes, and it was recommended by a committee of which I was president to be issued afterwards, alternately with coffee.

5381. Were the sickness and mortality reported to you by the other officers regularly?—Every morning.

5382. Did you recommend, during the last sickness, that the diet of the men should be improved?—Yes.

5383. Was that attended to?—As far as it could be.

5384. Were you able to inspect the state of the camps frequently?—I was in some part of the camp every day, and I made a periodical inspection of the whole; but I was out from morning to night, every day, either getting supplies down at Balaklava, or visiting some part of the camp.

5385. (*President.*) I see in an answer made in the appendix to Sir John McNeill's report, that you say you were extremely overdone by the enormous amount of returns that you had to make out?—I had a great deal of correspondence, and the clerks that I had were not very good; somebody must write, and I very often had to write all night.

5386. Do you think that the system of writing has been carried to too great an extent?—In all services there is a certain amount of writing, you cannot do without it.

5387. Do you not suppose that in the last forty years that has been much increased?—It has increased of late; particularly in the Crimea. Everybody there who wanted to speak out wrote. I received a hundred letters that I need not have received; but I had to answer them all.

5388. But I mean official correspondence, which by the regulations of the Government is rendered necessary, has not that very much increased? Do you not think that the amount of writing and work to be done now by the principal medical officer is very much larger than in the time of the Duke of Wellington's campaigns?—Not much, I think. When I went to the Crimea, in order to obviate the difficulty of case keeping, I issued a tabulated form to simplify matters. I think it necessary that there should be some record of the sickness, and by that it might be done with very little trouble.

5389. Would not that same simple plan which was found sufficient for active service be also sufficient for camps and cantonments?—Yes; you would have a much more accurate account so far as drawing any conclusions from the nature of the disease goes; you would have a tabulated form, in which you could put each class by itself, and you could at once see the bearing of any particular disease.

5390. Has it not been matter of complaint in the medical department of the army for many years that you are overlaid by returns?—Complaints have been made in the army; but you must have some record. You might, I dare say, modify the returns.

5391. You would not object to any plan that would go to simplify them?—No.

5392. (*Mr. A. S. Stafford.*) Do you think that on the whole they are satisfactory?—Some might be abolished I think.

5393. Do you think your position a satisfactory one in the field as principal medical officer, or have you any suggestions to make as to any alteration that you think ought to be made in the event of any future war?—I think one of the greatest improvements would be, that the principal medical officer should have due notice of all movements, and that he should have control over the arrangements; that a supply of carriages, which I believe was to have been the case, should be placed at his disposal, and that his requisition should be considered sufficient, for land transport.

5394. (*Mr. J. R. Martin.*) An amount of independent action which he does not now possess?—Yes.

5395. (*President.*) What was the arrangement made with the Land Transport Corps. Did you send

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a requisition each time that you wanted conveyance, or was there a permanent number of horses and men appropriated to you?—When first the waggons came out in October 1854, they were distributed to the different divisions; but there were only twelve, I believe, and from want of attention the mules all died, or they became ineffective afterwards. When the Land Transport Corps was established, the ambulance for the sick was concentrated in one place, and orders were given by the adjutant-general. A representation was made. I recommended that the director-general of the Land Transport should be ordered to comply with the demands of the principal medical officers of divisions; and out of that arose an arrangement by which a certain proportion of cattle was put at their disposal. I do not know that in the working of the plan adopted in the Crimea, any obstruction or difficulty arose; but with an army moving in the field each division should have its own transport.

5396. Do you understand that that is so ruled?—I was called upon in March 1855 to give in an estimate of the number of mules and carriages that would be necessary for the army then in the field, and it would have been acted upon; a certain proportion of carriage would have been allotted to each regiment and division.

5397. Beyond these points you have no general suggestions to make, further than that the principal medical officer should always be consulted, and that he should be acquainted with the future movements of the army?—Just so.

5398. And that he should be consulted as to the sites of camps?—Yes.

5399. And upon the same principle the junior officers ought to be consulted by the generals of divisions?—Yes.

5400. They are bound to make a representation to them as to everything going wrong, or to you?—Yes: if there is any difficulty, to me, and I should lay it before the Commander-in-Chief.

5401. It would be the duty of those officers to make a representation to you of any deficiency under which the troops were suffering?—Yes, and that would be immediately laid before the Commander-in-Chief.

5402. It would be a dereliction of duty on the part of an officer who was aware of any deficiency if he did not represent it to you?—Yes.

5403. Therefore when a representation is made to you it does not follow that a man merely to keep himself safe should do it, but it is his duty to make the representation?—Yes, certainly.

5404. (*Mr. A. S. Stafford.*) What is your opinion of the civil hospitals that were established at Smyrna and Renkioi?—I think that they were very expensive, and that they were of no use to us.

5405. Do you know the number of patients that were admitted to them?—Yes; I believe between the two about 2,324.

5406. Have you any idea what the cost was?—I think the pay alone was about 48,000*l.* a year.

5407. Why were they of no use?—Because when they were built we had upwards of 3,000 vacant beds in our own hospitals.

5408. The sickness had diminished before the establishment was completed?—Yes; and besides, both of them were out of the way for us. I advised that a hospital should be built at Sinope.

5409. If the war had continued, and the sickness had increased, then they would have been valuable, would they not?—They were too far away.

5410. Still they would have been better than nothing if the sickness had been increasing?—Yes.

5411. (*Dr. A. Smith.*) Besides the sickness decreasing, we were always adding to the number of hospitals for the sick?—Yes, we were. In the Crimea we were getting our own establishment, and the men would have been better in our own establishment. They were better at the Castle, and at St. George's Monastery, than anywhere else.

5412. (*Mr. A. S. Stafford.*) Then why were they sent down to Renkioi?—Because I was ordered to send them down.

5413. What proportion did you send down?—I was ordered to send the patients down to the civil hospital. At that time I had upwards of 3,000 vacant beds.

5414. (*President.*) You were not in want of medical officers?—The medical officers got sick, but we had a very fair proportion; but a great number got sick and went away, and we were occasionally embarrassed for a time.

5415. Were not the medical officers reduced at one time to something like half their original number?—No, I think not. I think the highest proportion was about 30 per cent. of sick and absent.

5416. The establishment being at the rate of 100, if it fell to 75, it was important to make it up from the civil surgeons?—It was not a permanent deficiency, it was mostly from the casualties of sickness.

5417. (*Sir H. K. Storks.*) Still there were 30 per cent. off duty?—Yes; but the civil hospitals were no relief to us in that respect. The work was done in the field; and the proof is, that out of about 218,952 admissions into hospital, only 2,324 went into the civil hospitals.

5418. Had you not some assistance from civil medical officers in the field?—Yes; some came there for practice. They volunteered for the purpose of seeing surgical practice.

5419. (*Sir J. Clark.*) If those civil hospitals had been in readiness 12 months before, they would have been of much use to you?—I do not see that.

5420. As you were deficient in military hospitals, would not a civil hospital have been useful to you?—Yes, it would have been if it had been there, but it was not there till we had as many hospitals of our own as we could ever require.

5421. (*Mr. J. R. Martin.*) In the event of a foreign expedition, should you not conceive that a reserved corps of medical officers should always be in readiness?—You would have a certain establishment of medical men, and then you would calculate upon a certain amount of sickness. We were unfortunately filled up with young men from the schools.

5422. (*President.*) Why were they such young men?—Because the service establishment had been reduced. The medical establishment had been reduced so low before the war, that when there was a great call for medical officers you had not got them.

5423. That being the case, therefore, the men that you got being so young, that was an additional reason for government trying to recruit the medical corps from other branches of the profession, and to get men of more experience?—I do not think they did that much.

5424. There were some men of some experience who went out to Smyrna?—There were some who went out there that had not that experience that their pay would entitle them to have. If you pay a man largely, you expect that he is a man of standing in his profession.

5425. (*Mr. A. S. Stafford.*) And certainly some of those gentlemen were men of standing and experience?—Some were not.

5426. (*President.*) You have spoken of the Land Transport, did you find any difficulty in the relations which existed between the purveyor and the commissariat in supplying your hospitals, or do you think that it would be better for the commissariat to supply the hospitals instead of the purveyor?—They do supply bread and meat; but you might very easily have a hospital commissariat—it would be the same thing under another name.

5427. (*Mr. J. R. Martin.*) Would it not simplify the arrangements that it should be so?—I think so.

5428. (*President.*) How would it simplify the arrangements?—Because you now draw from the commissariat bread and meat, and it would save accounting between the two departments.

5429. Are you satisfied with the relation that subsists between the purveyor and the medical officer?—He ought to be entirely under the medical officer, as he was in the Crimea. Mr. Ward came out, under an impression that he belonged to the War Office, and there was utter confusion. The service could not have been carried on if it had not been changed.

5430. That was put an end to?—Yes, but until I got out Mr. Fitzgerald I had trouble without end.

5431. (*Mr. J. R. Martin.*) Has that been put an end to by regulation?—No.

5432. It ought to be so?—Yes.

5433. (*President.*) Was there not a regulation sent out to the Crimea in the autumn of 1854, to the effect that the purveyor was to obey every order of the medical man?—I believe so. The greater part of those instructions were drawn up by me and submitted to Lord Raglan, when the purveyors said that they had no orders, and I was obliged to draw them up for their guidance.

5434. (*Mr. J. R. Martin.*) Are you aware that the hospitals are supplied in India by the commissariat department?—Yes.

5435. Do you approve of that system?—Yes, very much.

5436. (*President.*) Are they better supplied than ours?—No.

5437. (*Mr. J. R. Martin.*) It has been stated that in the campaigns in India, the commissariat take better care of the men in front, and allow the hospitals to come in second best, did you ever hear of any such deficiency?—I have never been on service in India, but from what I have seen I should not apprehend that.

5438. (*President.*) Is there not a tendency to that in every service?—Yes; there are difficulties in every service which you cannot avoid.

5439. (*Mr. J. R. Martin.*) If you had an officer for the service of the hospitals, in the commissariat department, you would not apprehend any difficulty?—No.

5440. (*Dr. A. Smith.*) If you had a commissary for that service, would it not be desirable that he should not be removable to another service?—Yes.

5441. And he must take the position then that the purveyor does now?—Yes; it would be another name, that is all.

5442. (*President.*) You have not had much experience at home of general hospitals?—No.

5443. You do not know the system that prevails as to the manner in which they are supplied by the purveyor, or the manner in which repairs are done?—The same system holds throughout the whole service. I have served regimentally at home; I have been at Chatham for three months.

5444. Great complaints have been made as to the difficulty which medical officers find in getting repairs effected?—Yes; that holds throughout the service. If a pane of glass is broken you can hardly get it mended.

5445. Do you consider it is possible for the principal medical officer of the army in the field, considering the voluminous nature of his correspondence, having the management of a very large department, to look after the sanitary condition of the troops?—Yes, perfectly; whatever there is it will always come to him.

5446. When the bad results have shown themselves?—It is his duty to see to it at first.

5447. Is it possible for any man to do it, considering the weight of his other duties. I assume that the medical officer ought to see that every camp is kept clean and properly drained, and properly placed, that the abattoirs are properly placed, and that the offal is properly removed, which, certainly, would take up the time of one man fully?—These are things that are so much the A, B, C, of camp life, that the principal medical officer of a division attends to them. General orders are given and they are all provided for; that is the A, B, C, of camp life.

5448. But it is still a kind of A, B, C, which is very often neglected?—No; I do not know that; I should not think so. For instance, talking about those general orders, they were issued very early in the Turkish campaign.

5449. Were they carried out?—Yes, afterwards. In January, upon going through the camps, I had to write officially on those very points both to the adjutant-general and to the quartermaster-general.

5450. When you wrote officially were the things you recommended attended to?—Yes.

5451. Always?—They were; orders were given.

5452. (*Mr. A. S. Stafford.*) Did you not find that the recommendations of the sanitary commissioners had a material effect in diminishing the amount of sickness and mortality in the army in the Crimea?—I do not think it affected them in any one particular instance; the result would have been the same if they had never gone there.

5453. (*President.*) Take the case of Scutari. If the dead dogs and animals had been left there, or if the wind that blew up the main sewer had been allowed to blow up the smells into the building, would it have been so, and was it not better to take precautions to put an end to those things?—Certainly; but the sanitary commissioners claim credit for reducing the sickness at Scutari in June 1855, but they forget that Scutari was supplied from the Crimea, and that the supply of sick had fallen off one half. I think in the March quarter, when we sent down about 6,000 sick, out of those perhaps 250 died on the passage, marking the gravity of the disease; and in the following quarter, when they take credit for the army improving under their auspices, we sent down about 3,000 sick, and out of those I think 19 died on the passage, but they had nothing to do with that; it was the character of the disease that had changed.

5454. Still, when one part of the buildings at Scutari had been drained, and the other not, cholera broke out in the undrained part, and not in the drained part?—Part of the building at Scutari is better constructed than the other. When the 49th was there they took fever. It was made a divisional hospital; but it was badly constructed. I do not say that you should not give proper attention to all sanitary matters.

5455. What you mean, I presume, is, that the nuisances had been detected, and the recommendations which were made by the sanitary commissioners had already been made by your own officers?—Yes.

5456. But at the same time, although there had been a detection of the nuisances, the Commissioners were quite right in repeating a representation of them when they found that former representations had not been attended to, and their function being especially to remove all nuisances, their recommendation received greater attention?—I do not know.

5457. Labour was placed at their disposal, was it not, and anything recommended was done?—At Scutari after a time it was.

5458. But in the Crimea?—Yes; after a time.

5459. (*Mr. J. R. Martin.*) You stated that all your recommendations in Bulgaria as to the encamping ground were not attended to?—Not until the cholera and pestilence struck the light division.

5460. (*President.*) Then you say that what you recommended in the Crimea was attended to?—As to the camp nuisances, in January and February I think almost everything that the sanitary commissioners put in their report had been recommended before by the medical men, and most of the things had been carried into effect, more or less.

5461. The first part of the answer is immaterial to the question; because a person who comes and sees a certain amount of nuisances does not abstain from commenting upon them, because somebody has commented upon them before?—No.

5462. (*Dr. A. Smith.*) Would it not have been fair to have said they had been commented on before?—Certainly.

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5463. (*Mr. A. S. Stafford.*) How did they know that?—They were told so, and they admitted it themselves.

5464. (*Mr. J. R. Martin.*) It is not alleged that the former recommendations were carried out invariably, only less or more?—Which of theirs were carried out effectually?

5465. (*President.*) Do you consider that it would be impossible to have an officer especially attached to the camp for sanitary purposes?—I think it would not work well unless he was an officer appointed by the principal medical officer. Every principal officer of a division ought to do that; and if there is any body, it ought to be one of his own staff.

5466. In civil life in a small town you cannot get these things done, unless you appoint some special medical officer to do it; yet there the facilities are greater than in camp life?—Do you mean a medical officer of health?

5467. (*Mr. J. R. Martin.*) To be the medical topographer of the army?—Yes, it would be like having two kings of Brentford.

5468. (*President.*) But you would have only one king, he would be under the principal medical officer?—That is the only way that it could be done, or he would never know where sickness was prevalent.

5469. But it would be desirable for him to know where the sickness was likely to occur, prevention being better than cure?—Yes, but what are the principal medical officers of divisions for?

5470. (*Mr. J. R. Martin.*) Is it not found in every service that there must be a division of labour, and is not that one of the causes of the nomination in civil life of medical officers of health in our great cities?—That may be, but every man who is a physician is a sanitary officer—his education makes him so.

5471. (*President.*) Do you find that to be the case with civil physicians?—Yes, I think so; their education makes them so, and in the army you are forced to be so more than in civil life.

5472. (*Mr. J. R. Martin.*) Are they taught previously to entering the army anything of military hygiene?—Not before, but they cannot avoid it afterwards; your education gives you general principles, and if you come to specialties, they get them in the popular works of the day.

5473. Is that sufficient for the sanitary service of camps?—I say that one's own education explains it, and no man would be at the head of an army who had not had some experience.

5474. Does it not happen that the old surgeon, as he grows old, when he looks back, feels that he has acquired that knowledge at the expense of the soldier in too many instances?—It may be, but we are not without instruction; some of the best works which have been printed were written by army medical men. There is no work better than one by Dr. Jackson.

5475. It relates, does it not, to the formation, discipline, and economy of armies, and there is only some part of the appendix which relates to sanitary matters?—Yes, but there are the works of Brocklesby, Maclean, Millingen, &c., and those are standard works.

5476. But they are not united and brought together as the French works are?—We have the whole of it, and what every man grounds his special information on in the able reports of the Health of Towns Commissioners.

5477. Do you think that those are known to the medical officers of the army?—They have very easy means of getting at them.

5478. (*President.*) Sanitary science is almost a modern thing, is it not?—The technicalities are.

5479. In England a few years ago nobody ever dreamt about the evils arising from cesspools?—Yes.

5480. (*Dr. A. Smith.*) The medical officers in the army long before that time knew perfectly well the evil consequences of cesspools, and they were constantly representing them?—Yes, constantly.

5481. How long have you been in the service?—42 years; I have served almost everywhere except in North America.

5482. Have you observed during that period that medical officers of the army have been employed only in the treatment of disease, or have you seen them also to be engaged in devising and recommending measures with a view to the prevention of disease?—In both, with regard to the prevention as well as the treatment of disease.

5483. What occurs from time to time in military service which renders it necessary for medical officers to recommend sanitary measures?—If you are in quarters, crowded or badly ventilated rooms, bad position of the barracks, and if on service, the position of camps, duty, food, and clothing, or anything that tends to injure the health of the men.

5484. Is it generally understood that medical officers are required to use every possible effort to prevent disease as well as remove it when it has arisen?—Yes.

5485. Are not medical officers of the army generally required to report annually all circumstances which they have considered calculated to injure health, and to state what steps they took in reference to them?—It is laid down under distinct heads what they are to report on, and they are instructed not only to state what representations they have made, but what answers have been given in reply.

5486. Are not senior medical officers of foreign stations and districts at home required to report periodically all defects they may discover in barracks, hospitals, or their precincts, which in their opinion may operate to the injury of the health of the troops?—Certainly.

5487. Are the defects reported usually remedied or only a portion of them?—Sometimes they are remedied and sometimes not.

5488. What have you understood generally to be the reasons why the whole were not remedied; were they the want of sufficient pecuniary means or a belief that they were not of such a nature as to require the adoption of the remedies recommended?—Sometimes they say that they are not in the estimates, and sometimes that they do not think they are required.

5489. Do you think that surgeons and staff medical officers superior to them are possessed of the knowledge necessary to enable them to detect defects calculated to operate disadvantageously on the health of troops, however circumstanced, and that they have the knowledge requisite to enable them to prescribe the measures which should be adopted?—Yes, I do.

5490. Such being your opinion, do you think it would be to the benefit of the service to introduce officers for sanitary duties, simply officers who should, wherever they might be serving, be quite independent of the principal medical officer of the army or command?—I do not believe that it would.

5491. Would the establishment of such officer or officers not be followed by an amount of confusion, uncertainty, and jealousy which would operate to the injury of the service?—It would most decidedly.

5492. Could a sanitary officer, unless he was placed exactly as a second principal medical officer, and in possession of equal powers, be able to secure all the information necessary to enable him to know exactly what was required?—No; I think not.

5493. Would the giving him a power nearly equal in all respects to the recognized principal medical officer, and more in certain respects, not place the military officer in command in a highly unfavourable position by depriving him of the power of fixing responsibility, so far as the health of the troops is concerned, on one individual?—Yes, it would, but he would most likely refer to the principal medical officer.

5494. Suppose this officer was appointed for that duty, and the Commander-in-Chief was to be guided by his reports, he would then take away from the principal medical officer the responsibility of reporting upon the causes of sickness?—Then you would

place the commander of the army in this position—he would either have confidence in his principal medical officer or not. If he had, he would refer the sanitary reports to him.

5495. (*Mr. J. R. Martin.*) Do you recollect an address of Lord Grey's in the House of Lords, in April 1854, on the military administration of the army?—No.

5496. It was there stated, that during the last half century, when the medical officers of the army, from all our foreign possessions, were making the reports referred to by Dr. Smith, that in none of our possessions was anything done, and that in several of the West India colonies, the soldiers were placed in barracks in which, had convicts been placed, the superintendent of the convicts would have protested against the men being placed there, and yet British soldiers were placed in those barracks?—I do not recollect any discussion upon the subject; but, with regard to the West Indies, I can state, that I wrote, I suppose, a quire of paper about the accommodation of the 92nd regiment in the barracks at St. Vincent, which contained, I think, a cubic space of about 250 feet for each man, and I recollect making use of that very expression, and saying that the felon was allowed his thousand cubic feet, and the soldier only 250.

5497. So that it is established that, notwithstanding those continuous and frequent reports, nothing was done?—I do not say that, because something was done on that occasion. Lord Grey, I recollect, in 1837 issued the most comprehensive series of queries that ever was issued as to everything connected with the organization of the army.

5498. That was the first movement that had been made by the government, was it not?—Yes, in 1837, and I should think that the result of that inquiry must have been of great value, for you have there the opinion not only of every medical officer in the service at that time, but of every commanding officer, both as to the clothing, quarters, diet, and everything connected with the economy of an army.

5499. You are aware that in the island of Jamaica, where the mortality for ages averaged 130 per 1,000 per annum, it had for a length of time been recommended by Dr. Robert Jackson that the European troops should be removed from the pestilential plains to the mountains, yet that had not been done until under the government of Sir Charles Metcalfe?—Yes.

5500. Does not that show that a system of reporting may exist for ages without anything being done?—Yes; but you must bear in mind that other reasons as well as the health of troops had to be considered in the selection of sites for barracks in the West Indies, particularly in Jamaica; the barracks there were built for a defence against an external enemy, and you could not put your troops in the mountains, but the defects of the sites were perfectly well known, and frequently reported on to my certain knowledge, as I served 13 years in Jamaica.

5501. Is it not stated by Dr. Robert Jackson, that the position of European troops in the West Indies has never had any reference to military considerations, on the contrary they were placed upon the sites of old towns which had been fixed upon either by the original settlers or by the naval commanders?—That observation does not apply to Up Park camp in Jamaica.

5502. (*Sir H. K. Storks.*) But Up Park camp was very unhealthy, was it not?—Yes, but it was one of the most beautiful sites imaginable; it was like a gentleman's park.

5503. (*Dr. A. Smith.*) Admitting that no notice was taken of those reports, the fault should not attach to the medical department?—No.

5504. And further, there is no evidence in existence to show, that if there was any sanitary officer for that purpose, his reports would be attended to?—No.

5505. Do you see any reason to infer that a sanitary commissioner's report, as he could not be an officer of very superior standing, would be any more attended to?—No; certainly not.

5506. (*Mr. J. R. Martin.*) Are you not aware that in the city of London it is distinctly the reverse of that, and that the officer of health for the city of London is attended to by the municipal authorities of this great city?—That may be.

5507. You stated just now, as to a sanitary officer, that you would naturally appoint an officer specially to execute those duties?—Yes.

5508. You do not see, if an officer was appointed by you, or appointed by the director-general, to undertake those duties, that there would be any inconvenience in it then?—I think it would be better left to the principal medical officer of the army.

5509. To select a man on the spot?—Yes, he would naturally select the man he thought best fitted for the appointment.

5510. (*Sir James Clark.*) Do you not think that the director-general at home would know the medical officers who were the best fitted to be appointed?—Yes, he might.

5511. (*Mr. J. R. Martin.*) Sanitary science being new in civil communities, it has been observed that the objectors are composed of two categories, one the older practitioners, who for a long time have ceased to improve their knowledge, and the other young men who have not acquired any real knowledge, does that accord with your experience in military life?—No, because every man must be to a certain extent a sanitary officer.

5512. That is after a long service; a young assistant-surgeon cannot be designated a sanitary officer?—No responsibility attaches to him, but the great question of a sanitary position of a camp or a barrack would not be left to young officers.

5513. Would it not be better that a young man entering the army should be instructed on those most important matters as to the prevention of disease?—Yes.

5514. You are aware that Dr. Allison of Edinburgh has stated, referring to this subject, that next to the important discoveries which during the last half century have been made in physiology, the most important are the discoveries that have been made as to the influences of external causes of disease?—Yes? I do not undervalue that, and I do not say that we do not want information in the army.

5515. (*President.*) Do you think that the present ration given to the troops is sufficient for a man, three quarters of a pound of meat, and a pound of bread?—He makes it up by what is called messing.

5516. He does not make up the meat, he gets vegetables, coffee, and tea. Is the meat enough?—Perhaps it would be better to give them a pound. If you take diet into consideration, take the hardiest races; they do not eat the greatest quantity of animal food. If you take an Irishman, or a Scotchman, or a Swiss, they do not eat large quantities of animal food.

5517. But an Englishman generally does?—Yes; if you were fixing a standard, a pound would be better; you see recruits come in who get fat on three quarters.

5518. Three quarters of a pound of meat with bone when cooked produces something not over eight ounces?—No, if you are fixing on a scale, I would fix a pound.

5519. Would it be a good thing if, instead of the commissariat supplying the bread and meat alone upon the $3\frac{1}{2}d.$ stoppage, the men messing themselves up to $2\frac{1}{2}d.$ or $3d.$, there was one uniform stoppage, and one ration which comprised all the various articles of food, do you think that would answer?—Not well; it would simplify things, but it would not answer.

5520. Why?—You would not get the supplies.

5521. Have you any reasons to state why it would not work well?—I think the things would not be so good sometimes.

5522. Do you not think that the commissariat would purchase better things?—There is a great

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feeling; I think it would be desirable to have the ration if you can have it complete.

5523. So as to secure that the men shall always have a sufficient balance of food to keep them in perfect health and efficiency?—Yes.

5524. And a net balance of pay always the same?—Yes; that is the great difficulty when you take the field, because the messing could not be carried out; there are no markets. I recommended salt and pepper, and those things, to be issued, but they said there was not occasion for them, and the consequence was that the men did not get them.

5525. Would it not be an advantage not to have to change the feeding of the troops when a war breaks out?—Yes.

5526. Unless it was unpopular among the men, you do not see any objection?—No; I think it would be desirable, and that was the great point that I was striving for, to get the commissariat to supply those things.

5527. Would there not be this advantage, that in the different climates you could by regulation procure the food that was best suited for the men?—Yes; you would take the diet of the place which was adapted for the climate.

5528. (*Mr. J. R. Martin.*) Under medical regulations with the sanction of the generals in command?—It would be fixed by a board of officers.

5529. You would allow a supper for the soldier?—Decidedly.

5530. A fourth meal?—No, a third meal of tea.

5531. Would you not approve of its being composed partly of meat. If the meat ration were increased, and some part of the meat should remain over, it would make a comfortable supper for the soldier?—They would put aside something for their supper.

5532. You would approve of that?—Yes.

5533. (*President.*) You have served in India for two or three years?—Yes.

5534. You never served in the field?—No.

5535. Have you seen the encampments of sepoy regiments?—Yes, their lines.

5536. They are in huts?—Yes; they are always hutted, and they get a sum of money if they change—hutting money.

5537. Are you aware of the fact that the mortality among the sepoy regiments is much less than among the Queen's troops all over the world?—I can fancy that, because they are in their native country.

5538. So are Englishmen here?—I think it is a great advantage to have small barracks and small hospitals.

5539. Do you not suppose that one great cause of their better health is, their not being congregated in large barracks?—Yes, they live quite differently from Europeans, they live with their wives and children, and they never drink. So far as the barracks are concerned, the regulations in India are on the most magnificent scale. Every soldier in barrack has 1,200 cubic feet, and every man in hospital 1,800, you could not do that in this country; the married men live there in what are called patcheries. When I was last at Hyderabad, in Scinde, I lived in a private soldier's rooms; they had just been finished; each married soldier has two rooms, a kitchen, a wash-house, and a privy. There is no subaltern officer in Great Britain so well provided with barracks as the married soldier is at Hyderabad, in Scinde.

5540. The mortality among the officers of the East India Company, who are permanently in India, I believe is not larger than that of the officers in the English army?—Between the West Indies and other stations a larger proportion of our officers who are abroad serve in unhealthy climates. In India officers have more comforts and better means of preserving their health than elsewhere.

5541. But the health of the Company's officers is better than the health of the Queen's officers in India?—That I do not know.

The witness withdrew.

Monday, 22nd June 1857.

PRESENT:

The Right Hon. SIDNEY HERBERT, M.P.	T. ALEXANDER, Esq., C.B.
A. S. STAFFORD, Esq., M.P.	Sir JAMES CLARK, Bart.
Col. Sir H. K. STORKS, K.C.B.	J. R. MARTIN, Esq., F.R.S.
Dr. ANDREW SMITH.	

PRESIDENT, The Right Honourable SIDNEY HERBERT, M.P.

Sir JOHN HALL, K.C.B., further examined.

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5542. (*President.*) Have you the copies with which you promised to furnish the Commission of the recommendations which you made?—Yes, I have.

5543. Do they apply both to clothing and the cleansing of the camps and various other subjects?—I have drawn out a kind of abstract of my recommendations, as to everything connected with diet and their dates, and one with regard to sanitary matters.

5544. Do you propose to read them or to put them in?—I will put them in.

[The same were delivered in.]

5545. Have you any of the recommendations which you made with regard to the hospital at Scutari?—There are some which I have already handed in.

5546. Do they include all?—These are merely some letters to Dr. Menzies about whitewashing.

5547. Have you any copies of requisitions for medical comforts in Bulgaria?—Yes, I have, and can furnish them.

5548. (*Mr. J. R. Martin.*) With their dates?—I think so. I can give the requisitions and all my demands in the Crimea up to March; after that there was scarcely any limit, the supplies were ample.

5549. (*President.*) Did you not make some changes in the forms for the weekly divisional states in the Crimea?—Yes, in Bulgaria I drew up a form.

5550. Can you furnish the Commissioners with the form as it was, and the form as you altered it?—I do not know what there was. I drew up a form then.

5551. For the weekly hospital medical states?—Yes.

5552. With regard to the statement that you made, I think you say that you received an intimation from Lord Raglan of the departure of the expedition to the Crimea the day before it sailed?—No. I had no official communication of it; it was merely a common rumour. It was with regard to the expedition to Kinburn that I received intimation the day before, and that was afterwards. That was about October 1855, I should think.

5553. I understood you to say that you had no official notice of the expedition to the Crimea ?—Not of the embarkation, that was made entirely without reference to me.

5554. You only heard of that the day before ?—No. I heard the general rumour.

5555. (*Mr. A. S. Stafford.*) What official intimation did you receive ?—None. I had an official notification on the evening of the 26th of August, that the "John Masterman" was to take the medical stores of 400 tons, and the expedition was expected to sail on the 1st of September.

5556. (*President.*) Did it say on the 4th ?—No, the expedition sailed on the 4th.

5557. Lord Raglan's general order announcing the sailing to the Crimea was dated August the 31st, was it not ?—Yes, at the end of the month.

5558. Marshal St. Arnaud's preceding it was on the 25th ?—Yes, I believe so. Some of the artillery embarked and went to Baltschek Bay before that; but I think that the divisions marched in and embarked about the 1st of September.

5559. If I understand you, your complaint is not that you did not know, but that it had not been specially communicated to you ?—No intimation was given to me, otherwise than that complaints were made that on board some ships they had no medical officers; on board other ships they had two or three: and that in some they had medicine, and in others none. I had no means of obviating it, because I did not know.

5560. In the evidence you gave January the 16th 1855, before Mr. Maxwell and Dr. Cumming, you mentioned there, "I never was consulted about the "quantities of medicine and comforts to be taken with "the army to the Crimea. The quartermaster-general "never communicated to me that he was going there. "Lord de Ros was sick. Major Wellesly was acting-"quartermaster-general." Did he communicate to you ?—No; the only communication that Major Wellesly gave me was about the "John Masterman." I never received a notification from the quartermaster-general's department, that on such a day such a part of the army would embark, and requiring me to make medical preparations.

5561. When you say, "I never was consulted "about the quantity of medicine and comforts to be "taken," would not that be a matter for you to decide ?—That is their wording, not mine. What I meant there was, of course, that I was to judge what was necessary, but I had had no intimation of the army embarking.

5562. You say, "I did not even know what number "of men were to embark. Lord Raglan consulted me "as to what I proposed to do for the conveyance of "the wounded, and asked me to put my views on paper, "as to what conveyance would be necessary for an "army taking the field. I wrote this letter," that is the letter of the 3rd of August. The two sentences appear to contradict one another ?—No. He said, in the event of the army taking the field, what would be the preparation.

5563. It was hypothetically put ?—Yes; I did not get the official information which is usually given in other places, from the quartermaster-general's or some other department. I understand, when the Commander-in-Chief decides on a movement, it should be the duty of some one to communicate it to the civil departments which have to make arrangements.

5564. When the staff officer turned out those nine waggons and mules, and left you with three ambulances with no means of moving them, did you make any remonstrance on that subject ?—I had no means. I had sailed, and I did not know it till I landed in the Crimea and found two waggons on the beach.

5565. Did you represent that this had been done ?—Yes, it was perfectly well known.

5566. Did you represent it to Lord Raglan ?—I do not know that I did; I did to the quartermaster-general's department; there was no means of helping us there.

5567. (*Mr. A. Stafford.*) It has been stated in evidence before the Commission that half a pound of additional meat was included in the daily ration, and good soup with rice daily, with pepper and salt, was given at the recommendation of Dr. Alexander to the whole army on the 27th July 1854; had you any knowledge of this?—No, I had not. So far as the meat is concerned, I thought that it was my own recommendation.

5568. (*Mr. T. Alexander.*) Perhaps I may put in this letter from me to General Airey: "Camp, Monas-"tir, 27th July 1854. Sir, As everything tending to "the preservation of the health of the troops at pre-"sent is of consequence during the prevailing "epidemic, I have the honour to suggest that half a "pound of additional meat should be included in the "daily ration, so that good soup, with rice daily, "pepper, and salt, may be had by the men, the meat "in this country being of very inferior quality com-"pared with that at the Cape, where the ration was "one and a half pound. I beg also to recommend "that during the discontinuance of the sale of country "wine good rum should either be issued in a certain "quantity as a ration, or if not, the same may be "allowed from the canteens at certain hours, and "under certain restrictions as to time and quality, "whenever deemed advisable. I have the honour to "be, &c. (signed) T. Alexander, staff-surgeon of "the first class, light division. To General Airey, "commanding light division camp, Monastir."

(*Witness.*) With regard to the half pound of meat, I never heard of Dr. Alexander's letter before now. In a conversation with Lord Raglan, his lordship stated a representation had been made to him that the meat was poor, and he asked me if I thought an increase would be advisable, and I said "yes," and he issued it temporarily. With regard to the rice, salt, and pepper, after my inspection of the different camps on the 15th July, I wrote to Lord Raglan recommending rice to be issued; and on the 19th a general order was issued sanctioning two ounces of rice or two ounces of barley to be issued daily to the troops. With regard to the salt and pepper, it was not issued: it was, I believe, ridiculed by some of the commanding generals, and it was not issued till, I think, the March following. I wrote two other letters on the same subject; one to Lord Raglan, and one to General Estcourt.

5568a. (*Sir H. K. Storks.*) There is a general order of the 30th July:—"It having been recom-"mended by a board of medical officers that during "the present season a small supply of spirits should "be issued to each man, the commander of the forces "is pleased to approve of the same, and to direct that "the commissariat department will issue spirits in the "proportion of one gill;" that was reduced afterwards to half a gill ?—Yes; that was a committee of which I was president, and I recommended it contrary to my own opinion. When the cholera broke out, there was a great outcry for rum to cure it; and as I had never seen rum do any good, I signed it more out of deference to the opinions of others than from any conviction of my own. The healthiest army I ever served with had not a drop of brandy, or wine, or malt liquor, for months at the Cape.

5569. (*Mr. J. R. Martin.*) That is a peculiarly fine climate, is it not ?—Yes.

5570. One of the best known climates ?—Yes.

5571. Referring to what you have said, with regard to the information given to you as the head of the department, is not a general order usually issued before an army breaks ground, and is not that considered a sufficient announcement to all the heads of the departments ?—No, not if you have arrangements to make; a general order is not issued until the day before the army marches. You are supposed to get the information as soon as the movement is decided upon. It is usual in India and at the Cape of Good Hope.

5572. At Rangoon Sir Archibald Campbell issued a general order weeks before, and all the heads of the

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departments prepared accordingly ?—Yes ; such an intimation would be sufficient.

5573. Was not the order of Lord Raglan issued several days antecedently ?—I think it was not issued before the 31st of August. So much so that Dr. Dumbreck got into great trouble for having said that the army was going to Sebastopol ; and I was called upon to ask him by what authority he stated that the army was going to the Crimea, and he was obliged to explain that it was the common camp rumour. That was when the Guards had marched down, and had come in for embarkation.

5574. As to preparation, it did not signify where the army was destined ; the question was simply a matter of embarkation on any given date ?—Just so.

5575. (*President.*) Do you recollect when the camp at Devno was formed ?—I do not recollect the exact date. The light division moved up, I think, some time at the beginning of July.

5576. General Brown commanded them, did he not? —Yes.

5577. Had he no medical assistance in selecting the camp ?—I do not know. I was not there at the time.

5578. (*Sir James Clark.*) You knew that they were going to Bulgaria, did you not ?—I had only just arrived from India, and I think that the light division had gone to Bulgaria before my arrival at Constantinople.

5579. (*President.*) You do not know who chose the sites ?—No ; I am quite ignorant of that matter.

5580. (*Sir James Clark.*) Did you find fault with the sites ?—Yes, with all but that of the second division. Nothing could be more objectionable than the one at Devno ; it was placed just above an extensive swamp.

5581. Are you aware that Omer Pasha wrote to say that our army would be destroyed if they remained there ?—No.

5582. When you found it so bad, did you recommend the removal of it ?—Yes, I wrote a letter on the 15th July, recommending it ; the third division was also recommended to be removed, but there is no record of it ; it was done verbally, as a great deal is done in the field. I not only recommended the camp at Devno to be removed, but I recommended that of the first division to be moved also, and the third division to be put on the Galata heights.

5583. Do you think that, if the site of the camps had been better chosen, the health of the troops would have been better ?—Yes, it might have been.

5584. (*President.*) Do you think, from your experience in many parts of the world, that the consumption of salt meat in our colonies is larger than is good for the health of the men ?—I think that you may give salt meat twice or three times a week with impunity, if you have fresh vegetables.

5585. Have you paid much attention to the subject of education for candidates for the army medical service ?—Not as to their preliminary education. I was quartered in London for about $3\frac{1}{2}$ years, and at that time I was a member of the board of examiners here.

5586. Do you think that the present system of diplomas that you exact from a candidate before he is submitted to an examination is sufficient ?—No man is admitted into the army unless he is duly qualified to practise medicine ; it would be a reflection on the colleges to say they are not sufficient. Nobody is admitted until he has passed those examinations, which would entitle him to practise in civil life.

5587. Supposing that the diploma of the College of Surgeons of London is a diploma of pure surgery alone, whereas a similar diploma from Edinburgh and Dublin comprises an acquaintance with materia medica and so on besides, should you say that those two diplomas are equally good ?—With regard to the London College of Surgeons, I should think that most of the young men have passed the Company of Apothecaries, who are a licensing body for medicine.

5588. That is, that they ought to do so ?—Yes ; they are not admitted into the service without producing a preliminary qualification that would entitle them to go up for examination,—so many courses of chemistry, so many courses of medicine, and so on.

5589. Do not you think that, if one diploma covers more ground than the other, in the case of a candidate bringing a diploma covering the least ground, something ought to be exacted from him more than from the others ?—I fancy that the examination at the board was intended to cover that.

5590. But the examination at the board is theoretical, is it not ?—No ; it is practical at the medical board.

5591. Do you see them operate ?—No ; you have no means for doing that.

5592. Nor are they examined clinically ?—No ; but when I speak of practice, I mean that they examine on practical subjects.

5593. Would it not be an advantage to examine them all practically as well as theoretically ?—You must have a hospital to do that, you would have a better test of the men by seeing them operate ; many men have a good deal of book knowledge and very little practical knowledge.

5594. (*Dr. A. Smith.*) Were you not then aware that it was the habit to send men who passed their examination before the medical board in London to Chatham, and retain them sometimes for six or seven months, during which time they were tested as to their knowledge in all branches of their profession, and also of operative surgery and practical anatomy ? —Yes.

5595. (*Mr. J. R. Martin.*) Were any of those who were sent to Chatham for six or seven months' probation, practically ever rejected afterwards ?—That I do not know ; I never served at Chatham.

5596. (*President.*) You were an examiner for some time ?—Yes ; about three years and a half.

5597. What was the proportion of rejections among the candidates coming up ?—I could hardly say ; the rejections were certainly very small ; occasionally men were rejected.

5598. Did they come up for examination again ?— In the case of one young gentleman who had been rejected, his father had been in the service and he was very much distressed about it. It was one of those cases in which we had introduced written examinations, and when his father saw the questions that had been put, and his son's answers, he was obliged to admit that he had had a very fair examination and that he was very properly rejected. He was very much distressed about it, and he was sent back to study. He applied himself diligently and passed afterwards.

5599. So that none were finally rejected ?—I do not recollect that. I recollect the case alluded to better.

5600. (*Dr. A. Smith.*) From your position, had you an opportunity of ascertaining whether or not they were rejected ?—No, not beyond the examination here ; what I allude to is the examination at the board here.

5601. (*President.*) Would it not be an advantage to have a practical examination before men go to Chatham, because a man that cannot pass a practical examination is hardly fit to go down to Chatham ?— You could have a practical examination there if you liked. You do not admit people till they have passed an examination which would entitle them to go and practise medicine in any part of the United Kingdom.

5602. You profess in entering the Queen's service to give them immediate advantages, in return for which you have a right to see that they are perfectly competent ?—Yes ; but you must alter the whole system of examination as instituted for that purpose. I do not think that it would be well to abolish that. Anybody who has examined young men will know that after they have passed their examination, if you

examine them, as I have done, six or eight or twelve months after they have passed their collegiate examination, you find that they have not studied or paid any attention, and as knowledge is fleeting, you will speedily observe that they have gone back.

5603. Still examination is an advantage, as showing that they were capable in getting up the subjects ?—Yes.

5604. That is, putting it as a mere cramming examination ?—Yes.

5605. But a practical examination very much militates against the system of cramming ?—Yes, in surgery and medicine; particularly in surgery.

5606. Do you approve of the system of competitive examination ?—I think it is a very good thing.

5607. You would prefer it to a mere absolute standard ?—Yes, it is answering very well in the East India Company's service.

5608. Do you think that their system is also a good one of having a permanent body of practised examiners ?—I do not see any great advantage in that. A practised examiner is very well if you are examining a man to test his school education, before he is admitted into the profession at all: but before he is admitted into the service it is not absolutely necessary, and I think it would be rather a disadvantage. It is very important for the director-general to have a certain knowledge of all candidates, and he acquires it by superintending every examination better than in any other way.

5609. Would you require any knowledge of military hygiene from them before they pass their examination at the medical department, or would you prefer letting him acquire it subsequently ?—I think that forms a part of a medical man's general education, but you may examine him on that, of course, and he may turn his attention to it. I think that if you instituted a military chair, that would be a very important branch of it.

5610. You have two military chairs, have you not; one in Edinburgh and the other in Dublin ?—Yes; military surgery is general surgery; but it is of very great importance to have your men taught what they are likely to meet with when they enter the service, and that can be only taught by people who have seen it.

5611. As at present a student can get this advantage in Edinburgh or in Dublin, but not in London, is not that an inequality which is disadvantageous ?—I think it can all be acquired by reading approved works.

5612. Would it not be better, and is it not in practice done, that the examination of the medical department should include military hygiene ?—It is very easily introduced.

5613. Would it not be better to keep it out and to make it the subject of a subsequent examination at Netley or at Chatham ?—I think it would be a very appropriate place to qualify men on that subject.

5614. If you moved your chairs from Edinburgh and Dublin into a general hospital, then you would ensure that all the men would go through these courses ?—Yes; that is very important, more important than having a chair either in Edinburgh or in Dublin. I would compel each young candidate who enters the service to remain there till he became thoroughly acquainted with the routine of the service, and with everything connected with the health of the army.

5615. (*Mr. J. R. Martin.*) To go through a year's probation ?—Any fixed time; you might have to modify it for special instruction, but I think that it is very important. Nobody can speak more strongly on that point than myself, having had a number of young men sent out who were very unfit for their duties; there was nothing to object to in their professional education, but there was a total ignorance of everything connected with the army. It was no fault of theirs; but if they had been at Netley they would have acquired that knowledge. Some of them came direct from the schools, but the service required it. If young men could be sent down to Netley, or any other establishment where there was a large hospital, to have the benefit of instruction from a person conversant with army arrangements, it would be a great advantage to the service.

5616. (*President.*) Would you have any examination on those subjects before they left the general hospital ?—Yes; I think, whatever examination there might be, the director-general would be wise in having an examination before they left.

5617. So as to make sure that they had not wasted the opportunities given to them ?—Yes; that ought to be enjoined.

5618. What length of time would be sufficient for them to acquire this ?—Six or eight months.

5619. (*Mr. J. R. Martin.*) Would it not be an advantage, as a superadded knowledge to be imparted to the young military surgeon, that he should also receive a manual of military hygiene; and that there should be a work for the benefit of the young surgeon ?—I think it would be very desirable; but the leading points are comprised in other works that are published.

5620. But they are a good deal scattered about in French or English works, are they not ?—It would be an advantage, I think; and there ought to be a manual to explain to the officers entering the service what they would have to do in every position in which they might be placed. I think that is very much required undoubtedly; not only the forms of all the returns that they would be required to send in, but everything.

5621. (*Sir J. Clark.*) You mean, that every officer should have that information ?—It might be an advantage to them.

5622. (*President.*) Would you have any examination of an assistant-surgeon for a surgeoncy ?—That is a question, within my recollection, that was tried.

5623. That existed, did it not, when you came into the service ?—Yes. I was examined, and no good resulted from it. Perhaps it gave great dissatisfaction. I think there is no objection to it.

5624. Was it well conducted ?—Very stringently.

5625. It was conducted by two or three officers named on the spot where the candidate was ?—Yes.

5626. Did it not produce great inequalities in the examination ?—Yes; but the director-general had the opportunity of judging,—the questions were written and the answers were written down, and forwarded to Sir James McGrigor, then at the head of the medical department.

5627. (*Sir H. K. Storks.*) Who proposed the questions ?—The Board of Examination formed their own questions, and wrote those questions down, and the answers were appended to them.

5628. (*President.*) There were no means of comparing the relative merits of one examination in the East Indies and another in the West Indies ?—The director-general had an opportunity of judging, as he saw them all.

5629. There was not sufficient similarity in the questions put to enable any one to say exactly ?—No, you could not say that it was a test of the same thing. The same question was not put to several. The questions varied on every station.

5630. Since that time the whole system of examination has been very much improved ?—Yes.

5631. And the feeling with regard to examination has very much altered ?—Yes, I think it would ensure this, that medical officers, knowing that they must undergo it, would then keep themselves conversant with the opinions of the day.

5632. When a young man first joins his regiment he is thrown into society different from what he is accustomed to, and there is a great temptation to idleness, and the fact of his having an examination to go through would, you think, keep him to his work ?—Yes, it might with some, but it would not have that effect with others; if a man were inclined to be idle he would be idle, and he would trust to the chapter of accidents to read up at the time.

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5633. It might make a man more diligent?—Yes; as he would have an object in keeping up his information.

5634. (*Sir J. Clark.*) If a series of questions were issued every year by the director-general, for all stations abroad, would not that afford the means of comparing the whole of the assistant-surgeons examined the same year?—If you could have them issued simultaneously; but if you issued one set of questions they would get hold of them in particular places.

5635. (*President.*) There would be no very great difficulty in preventing that? — Perhaps not; but would you examine everybody?

5636. (*Sir J. Clark.*) Every one before promotion?—When those other examinations were carried out in former days, many of the assistant-surgeons had been 14 or 15 years in the service, and it was supposed that promotion would follow.

5637. (*President.*) Might they not take their examination at any period after two years?—I believe that is the system in the navy. Assistant-surgeons to be qualified must go in for an examination for the surgeoncy, there is no difficulty in it.

5638. (*Dr. A. Smith.*) How would you provide for this case:—A senior or nearly a senior assistant-surgeon is serving in New Zealand, and he ought by seniority to be promoted; would it not be necessary to bring him home to examine him?—According to this plan I presume it would.

5639. (*Mr. J. R. Martin.*) You stated, did you not, in your last examination, that in the event of a medical officer of health being appointed for field service, he should be subordinate to and dependent upon the principal medical officer?—I think he ought to be so. There would not be much harmony if he was independent of the principal medical officer, it could not exist.

5640. Has it not been rather in your experience that if one officer be subordinate and dependent upon another officer, clashings may occur; but if you render the two functions separate and distinct, no such injurious obstructions to the public duty take place?—You would leave the Commander-in-Chief with two authorities to refer to, and he would not decide very likely without consulting the principal medical officer. I can give an example. All the reports of the sanitary commissions sent out to the Crimea were sent to me. It could not possibly work well, and you would place the Commander-in-Chief, I think, in a position that there is no necessity for.

5641. (*President.*) At present the Commander-in-Chief consults neither?—I do not know that; there are things done certainly without consulting either.

5642. (*Sir H. K. Storks.*) He need not consult him?—He is not obliged to consult the principal medical officer. There is nothing to compel him to ask his opinion upon any subject.

5643. (*Mr. J. R. Martin.*) Are not the medical, surgical, and administrative duties of the principal medical officer in the field absorbing pursuits, and sufficient to occupy all his attention without being called upon to supervise the sanitary arrangements of an immense camp as well?—Yes, I think that I would not saddle him with much more duty, though he cannot do his other duties without attending to that; he is the only person who has information; there is no person else if a regiment is encamped in an unhealthy locality that knows it so soon; take, for instance, this as an example—we had sanitary commissions in the Crimea, yet I was obliged to remonstrate about two battalions of the Royals being placed in a very objectionable site.

5644. (*President.*) Still with an army in movement it would be quite impossible for the principal medical officer to be going round with the quartermaster-general to look at the sites and the ground to be taken up?—Individually at the time it would be so, but he has subordinates. There is a deputy inspector with every division. There are first-class staff-surgeons with every division, and one of those officers could go round with the quartermaster-general.

5645. But are they all equally fit to discharge the duty?—I am supposing that every man is to be instructed.

5646. (*Mr. J. R. Martin.*) That is not the case in civil life; a separate functionary is set aside as an officer of health?—Yes, but you are touching on private property.

5647. No, public health?—I do not think that is in point exactly; the army is so organized that there must be subordination. You must place a person quite independent of that, and I do not think that that would be desirable.

5648. It has been stated in evidence here by one, if not by two general officers, that they would consider it an advantage that the sanitary officer should be separate and distinct?—They have not generally acted up to that; besides, it is supposing that the military medical officer is not competent to give this advice, which I do not admit.

5649. No, but that another selected functionary shall be more competent?—If you give a military functionary authority, he does not want for intelligence if his recommendations are attended to. I think they would be sufficient.

5650. Does your experience in the army tell you, that every officer as he rises to administrative duties is fit for so high a position?—I do not look upon it as so high a one, but there are always men in the army that are competent, to whom they can refer.

5651. (*President.*) At any rate there would be, if it were drawn out, and proper weight was given to it?—Yes.

5652. (*Dr. A. Smith.*) You would have a properly selected officer from the staff to do it?—Yes, the intercourse of the principal medical officer with them would enable him to judge of their capacity, and he would select a proper man.

5653. (*Sir H. K. Storks.*) Is it desirable to have such a person?—Not to set apart a man. Supposing an army is separated, the one division may go 20 miles and the other may go 10 miles off. Sebastopol was an exceptional case, but if an army was moving you could not do it; where would the sanitary officer be? He could not be with all the divisions.

5654. (*Mr. J. R. Martin.*) Are you aware that the French had a council of sanitary officers?—Yes, they had; I think it is a board. M. Baudens came out and I met him in the Crimea.

5655. I understand that your principal objection is, that the two authorities would clash together?—Yes, I think it would be found so.

5656. Is it found to be so with the other heads of departments, the adjutant-general and the quarter-master-general?—No; but they have distinct duties, if you put anybody in to interfere with their duties they would clash.

5657. (*President.*) Has not the adjutant-general some one serving under him?—No, excepting his subordinate officers, who cannot clash with him.

5658. (*Mr. J. R. Martin.*) But the prevention of diseases and their cure are separate functions, are they not?—Yes. You are bound to guard against disease; and you have to take every precaution that either science or experience points out.

5659. (*President.*) Is not the difference between an army medical officer and a civil officer this,—that the army officer has both duties to perform, while the civil officer has only one?—Yes.

5660. Therefore it is one of the chief duties of the army medical officer?—Yes; his object is to keep the troops well, while the object of a man in private life is to have people sick; of course it is the duty of the military medical officer to use his utmost endeavours to take every precaution he can to preserve the health of the army.

5661. (*Mr. J. R. Martin.*) Hitherto those efforts have not been successful?—Because their recommendations have not been attended to.

5662. (*President.*) Is not this a part of the reason for that, — that there is not an officer whose distinct and sole duty it is to make them?—I do not

believe that they would attend a bit more to him, unless the general officer commanding were compelled by authority to take his opinion, and then he might follow it or not.

5663. Unless such an officer were invested from home with the necessary authority ?—Yes.

5664. (*Sir H. K. Storks.*) The general officer would appoint officers for that special duty, and there would be nothing contrary to the regulations in that ? —He would hardly do that, I think, without consulting the principal medical officer. I think that the principal medical officer would better make that arrangement.

5665. (*President.*) It is a question of the division of labour among medical officers ?—Yes.

5666. (*Mr. A. S. Stafford.*) Would more inconvenience arise from the clashing of the departments, than advantages from the appointment of such an officer ?—Yes, I think so.

5667. (*President.*) If an advantage was derived from it, the inconvenience cannot be put against the clashing, as the advantage would be the health of the men ?—Yes ; but I do not think that it would be found to work.

5668. (*Sir James Clark.*) If you had had an intelligent officer of health in the Crimea, would it not have been very useful and a comfort to you to be able to send him in all directions, and to bring a thorough report to you ?—I had that in the Crimea, so far as any precaution was possible; the necessities of the service were our difficulties, it was more that than a want of intelligence in the medical officers.

5669. Suppose sickness prevailed ten miles distant from you ?—Then it would be your business to go there: you would have a daily report.

5670. (*Mr. J. R. Martin.*) Yet the government were so little satisfied with the arrangements that a sanitary commission was sent out expressly to investigate the matter ?—Yes.

5671. (*President.*) Would you appoint a candidate to a staff assistant-surgeoncy or to a regimental assistant-surgeoncy in the first instance ?—I think it is a matter of indifference ; it depends upon where he is going to serve ; if he is going to serve in garrison where he is attached to a regiment, it does not matter whether he is regimental assistant-surgeon or staff assistant-surgeon. In the early part of my life I was a staff assistant-surgeon.

5672. The duties of a regiment are more likely to teach a man the work he will have to do than a staff appointment at the commencement, are they not ?—That depends upon where the staff officer is employed.

5673. If he is stationed so that he can be employed in a regiment, well and good ; but your object is, that he should be employed in a regiment ?—With the exception perhaps of the staff assistant-surgeon, to attend to the staff of the department. A man gets a better knowledge of the service by going into a regiment. I think it is a matter of no consequence at first ; but I think a man ought to serve in a regiment, and before he is made a staff surgeon I think it very essential that he should be conversant with the duties of a regimental officer.

5674. (*President.*) That is generally done, is it not ?—Yes.

5675. (*Sir H. K. Storks.*) Is it not very important that medical officers should know the habits of the soldiers ?—Very much so.

5676. And their characters ?—Yes ; I think that when I was the surgeon of the 33rd I knew the characters of the men better than the colonel of the regiment or the adjutant.

5677. (*President.*) How many years have you been in the inspectorial rank ?—Since 1841.

5678. Are there any instructions for the discharge of the duties of an inspector ?—I do not know that there are any ; there is a general code of instructions.

5679. Published ?—Printed or lithographed, I think ; it is generally handed down from one principal medical officer to another in the office.

5680. Do they limit the extent to which the inspector should interfere with the prescribing officer, for example, in the treatment of a patient ?—You are enjoined to supervise, and I do not think that there is any great difficulty in that; and unless something is very outrageous, you do not interfere ; doctors are an irritable class.

5681. I suppose a regimental surgeon or a staff surgeon is as good a medical man, professionally speaking, as he is at any time of his life ?—Perhaps he is.

5682. He, having the care of the patient from the beginning practically, is more likely to know what is good for him than the inspector who is not acquainted with the former stages of the case ?—Yes ; that is true, but things may strike you ; it is not done offensively; you would say, Do not you think so and so ? and, Have you tried so and so ?

5683. You would not make a man adopt a mode of treatment which he evidently disapproved of ?—No ; I do not think it would work well for the inspector, for it assumes responsibility. The regimental surgeon may be very good, but it does not follow that the superior officer may not be quite as good ; and he may see a line of practice pursued that he does not think right, and that the patient does not improve under, and he would merely suggest, Do not you think that so and so would be better ? It is done in that way.

5684. (*Mr. A. Stafford.*) It was stated in evidence by a regimental surgeon, before the committee on the army medical department, "A surgeon can get an "order from a staff surgeon of the first class, from a "deputy inspector, or an inspector general, as to the "amount of food that he shall give the patient, as to "the amount of medical comforts that he shall give "to the patient, and as to the medicines that he shall "prescribe for the patient. Now, in private life that "would not be tolerated ; a man would consult in "private life, and not be ordered." Is that true ?—I should say not. At least it might so happen in military subordination. I do not mean to say that he could not say so, but you must take the practical working of the department, and not take what might happen.

5685. (*Sir H. K. Storks.*) Still it depends upon the man, and not upon the system ?—No. If a man were a competent surgeon, he would say, "If you "enforce that line of treatment, I do not feel myself "responsible."

5686. (*President.*) A surgeon would think twice before he made that remark to the inspecting officer ? —He might.

5687. Is there any truth in the statement that generally obtains, that the tone of the inspecting officers to the officers under them, is rather an unbecoming one? It is very authoritative ? — That would depend upon the individual.

5688. Their tone is rather like that of a combatant officer giving the word of command ?—No ; I do not think that is complained of; at least I have had a great deal of experience, and I have not found it so. You must make them do their duty. It is your duty to see that the regulations of the service are observed. I do not mean to say that men may not complain of being made to do their duty ; but you may have men that require to be looked after. Every regimental surgeon is not perfection, but no man would interfere with another who did his duty conscientiously ; but you may be compelled not only to insist upon a man doing his duty, but to report him.

5689. Do you make those reports confidentially or publicly ?—The director-general has no means of knowing the diligence of officers except through the reports made to him by the head of the department on the different stations. They are made periodically and confidentially generally once a year. They are so far confidential that nobody would care if they were published to-morrow. It is a painful thing to do, as I have had, to report a man; but I have always

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told him, I feel it my duty to report you, and I would advise you to be more cautious in future.

5690. You tell the man what the complaint against him is ?—Yes.

5691. Is that the invariable practice ?—I should think that, generally, no man can be reported upon who does not know himself that there are grounds for it.

5692. (*Dr. A. Smith.*) So far as your experience goes, when you have made those reports, have you not frequently known that a medical officer who has been unfavourably reported upon has received an admonition from the director-general, and been informed that unfavourable reports had reached him, and if he persevered in his improper conduct, it must prove very detrimental to his advancement in the service ?—Yes.

5693. (*President.*) If the director-general appoints only by seniority, what object is there in knowing the character of the officer ?—I do not think it would work well to take seniority alone.

5694. (*Dr. A. Smith.*) Supposing it was taken, would it not be necessary that the director general, who has occasion from time to time to appoint a man to a special station, and not where he was getting promotion, should know that he was not appointing an indifferent, careless, and idle man ?—Yes.

5695. Therefore it is necessary, if it has not reference to promotion, that the director-general should still know the characters of the men ?—Yes.

5696. (*Mr. J. R. Martin.*) Are you aware whether your system of confidential reports is the same as that made use of in the army with regard to military officers ?—Pretty much the same, I think.

5697. (*President.*) Has it not been held that in the army it is a matter of course to communicate to an officer against whom a confidential report is made, the nature of the complaint made against him ?—That is, if it is a thing of gravity, I think it would be.

5698. You say that you do not approve of the principle of seniority as a rule for promotion ?—I think that it would be found an inconvenient rule; distributed as the army is over every quarter of the world, you might find it particularly embarrassing to the service.

5699. In the upper ranks, the inspectors' ranks, all the promotion is now made by selection, is it not ?—No, I think that seniority is consulted as well.

5700. That is, it is an element in the ground of selection ?—Yes, and I think it is fairly so.

5701. But the rule, speaking broadly, is selection for the rank of inspector, is it not ?—In some cases it is, in others it is not.

5702. (*Mr. J. R. Martin.*) Ought not the rule to be absolutely this, that it should be seniority, all other things being equal ?—The senior officer being equal he would get it. You would select him, but supposing that the director-general wants an officer for a particular service, he might not consider the senior officer in the service a competent or deserving man.

5703. Then would it not be right to pass him over ?—That would be a case of selection. I think that promotion is very fairly distributed now. It must be a combination of both. If you make the promotion purely a matter of seniority in an extended department like the medical department of the army, the men would not have that inducement to exert themselves which they ought to have.

5704. (*President.*) Take the case of a man passing from the rank of assistant-surgeon to that of surgeon, is that done by selection or by seniority ?—I think that seniority guides it almost always.

5705. Not entirely ?—Not entirely. If you take the whole of the promotion for the Crimean war, I think that the system of giving promotion by seniority has been very fairly observed.

5706. Had you any power of promotion in the Crimea ?—No, I could only recommend.

5707. Upon what principle did you recommend them ?—If it was not seniority, I recommended for special qualifications the men that I found very competent and very deserving.

5708. (*Sir H. K. Storks.*) Men who had distinguished themselves ?—Yes.

5709. (*President.*) You were guided very much by the spirit of the reports that you had received yourself ?—I was guided by what I had observed of the individuals.

5710. I understand that in sending the confidential reports your rule has been, never to make a report against a man without communicating it to him ?—I do not think that I have ever done it.

5711. (*Mr. A. S. Stafford.*) You feel quite sure that you never reported against a man without informing him that you had done so ?—I do not know that I made any confidential reports from the Crimea all the time that I was there, so that the rule was in abeyance there; but in other stations where I made my annual confidential reports I did so.

5712. (*President.*) If they are so valuable, surely in time of war, when there was great opportunity of seeing what men were, that was just the moment when confidential reports would be of the greatest value ?—If you look at my list of about 700 officers, it would have been a very laborious thing to do.

5713. Still, you say that the duties of your office were not such but that you could exercise the duty of a sanitary officer ?—Yes, but it must be understood that the whole of the sanitary duty is not to fall upon me. No principal medical officer can himself do the whole of the work of the army. He must depute others, and depend upon those under him.

5714. (*Mr. A. S. Stafford.*) If in such an important position, with the health of the army suffering so much, and public attention being called so much to it, you made no confidential reports, surely the value attached to confidential reports must be considerably exaggerated ?—I made reports of individual officers that I recommended, but I did not make a general confidential report.

5715. (*Dr. A. Smith.*) When you saw eight or ten medical officers doing their duties exceedingly well, were you not in the habit of mentioning them to me from time to time in letters ?—They were mentioned, not only to you, but to Lord Raglan after every engagement, and I could show you a list of the officers whose names I submitted at the end of the war to General Simpson.

5716. Therefore, when you say that you did not make confidential reports, you mean, that you did not comprise in your report all the medical officers serving under you ?—Yes, the confidential report in which you embrace every person under you, that report I was not called upon to make, and I did not make it.

5717. (*Sir H. K. Storks.*) Did you report unfavourably of certain officers in the Crimea ?—I may have given my opinion.

5718. (*Mr. J. R. Martin.*) When you say that your own practice was always to inform an officer of whom you had reported unfavourably, you still declare that such is not the rule of the service ?—I think it is, in the ordinary inspection reports that you make.

5719. Is it a written and published rule of the service ?—It is an understood rule.

5720. (*Dr. A. Smith.*) On an occasion when a promotion takes place of a man to a higher grade, do you not find it your duty, occasionally, to inform me how he performs his duties in that higher grade, and whether he gives satisfaction or not ?—Yes.

5721. Are you aware that Lord Raglan and other general officers sent home confidential reports to the Commander-in-Chief during the war of every officer serving in that army ?—That I do not know.

5722. (*Mr. J. R. Martin.*) Have you ever known in the course of your service an instance of an assistant-surgeon being passed over in the promotion to a surgeoncy of the regiment ?—Yes, I think I have.

5723. Was he removed from the service ?—No.

5724. Ought he not to have been removed from the service ?—That is the question. He might not have

done anything that would authorize his being removed from the service, and yet he might not be a desirable person to promote to the surgeoncy of a regiment.

5725. If you declare an assistant-surgeon not fit to be promoted to a regimental surgeoncy, is not that so grave a matter that it should imply the necessity of his removal from the service ?—No, I do not think that. You might put him on half-pay. It might be a very hard case.

5726. (*President.*) You would give all cases of promotion from assistant-surgeon to surgeon by seniority, barring only unfitness ?—Yes, I think so. I think that that has been the practice. I do not believe that there are half a dozen instances during the whole of the promotion in the last war where men have not been promoted in their turn, except those individuals who were far away, and where they would not have desired it, for instance in India.

5727. Does that apply to the rank of assistant-surgeon alone ?—To surgeons. I think that seniority was followed out there. Certainly it was followed out, and some men were promoted by seniority that I would not have selected had I had any voice in their recommendation.

5728. So far as the good of the service then went, you could have made a better choice by selection ?—Yes.

5729. From the surgeon to the first-class staff surgeon, you think that generally seniority rules ?—I think that it has been very much guided by seniority ; taking the general rule, I think seniority has had its fair consideration.

5730. When you say that taking the general rule, do not you think there ought to be some intelligible line drawn that certain ranks should or should not be promoted by seniority, and that certain ranks should or should not be promoted by selection, or that there should be a specific number in each rank, say one in three by selection, and the other two by seniority ; for is it a good system where it is professedly seniority that you should find by some arrangement or other that the men promoted are not the seniors ?—I do not think that it has ever been professed in the medical department to be one of seniority purely, except in the ordnance, and that was very much complained of.

5731. Your opinion is decidedly in favour of selection ?—I think it would not be advantageous to the service to prevent the director-general from making a selection.

5732. First of all, you consider that it causes great emulation when there is a hope that merit will get its reward—and secondly, for the good of the service you get the best men in the highest places ?—Yes.

5733. But, now do you think there is no difficulty in carrying selection into effect ; has the director-general the means of judging who are the best men ?—Yes. He has this kind of means. He cannot know them individually ; he must be guided much by the reports made to him of individuals. He would fairly and naturally, I suppose, to obviate any partiality or any injustice to any particular individual, take three or four or five of the last confidential reports upon that officer. That would be a very fair test for him to judge by.

5734. Do you think that an examination of the case books afford any insight into an officer's qualifications for an assistant-surgeon ?—It cannot be, and I do not think it does.

5735. Why does it not ?—Perhaps the men have drawn on their fancy ; and except you are overlooking a man you do not know what the case may be. It may be a very scientific record of the case, and yet not be a very correct one.

5736. But the register as it stands now is not of much value as a test ?—So far it ensures attention, and is a proof of that attention which you cannot enforce in any other way.

5737. Should you not say that it was easier for an idle young man to describe a case that he sees than to invent one ?—Yes, of course it is not impossible that he might do that, but then a young man is supposed to be under his surgeon, and you enforce it more with a view to ensure a particular amount of attention on his part.

5738. Is it not made rather too diffuse, and is not the attention divided too equally between important and unimportant cases in the register ?—An officer is not called upon to make those reports in trifling cases that he is in serious cases ; he makes his report every second or third day ; in a chronic case it is merely to show that he has seen the man, and that he has been under his supervision ; but in serious cases it requires that it should be very much left to his discretion ; it is difficult to draw a line. If you say the assistant-surgeon is merely to put on record serious cases, then you must leave him to determine that and he will put down nothing perhaps.

5739. (*Mr. A. Stafford.*) The case may turn out to be serious when it is too late to record the whole of it ?—Yes.

5740. (*President.*) You would trust to the confidential reports, and you think that from them the director-general would know the character of the officers ?—Yes, if they are confidential reports, and if they are honestly made to him, they are not intended to injure a man, but to give the director-general a general idea of the way in which the officers have performed their duties. I think it is necessary for him to know that.

5741. (*Mr. A. S. Stafford.*) Where would be the harm of communicating to the officers those confidential reports ?—You might let the men read them, I think, but it would not be pleasant to them or to you.

5742. (*President.*) You say that you do that always yourself ?—If I have had occasion to report a man in my yearly report, I have generally told him.

5743. Merely that you were obliged to report him ?—Yes.

5744. (*Dr. A Smith.*) Does not a man know generally what he has been doing ?—Yes. No man is ever reported who attends diligently to his duties.

5745. (*Mr. A. S. Stafford.*) But the confidential reports are not confidential reports if they are generally known ?—They are not generally known. A man generally knows that he has been serving badly.

5746. Would there be any objection to placing them on the same footing with the reports relating to the combatant officers ?—They are pretty much the same. If there is anything that makes a man objectionable, the director-general always admonishes him, but if they are trifling cases they are not worth mentioning.

5747. (*President.*) Was there an advantage in the creation of the new rank of first-class staff surgeon ?—It was a term that nobody understood at first, they thought it was following the plan of first or second class clerks, used in the public offices. I think the better term would have been surgeon-major, which was a term already in use in the service.

5748. (*Mr. A. S. Stafford.*) There are six ranks now, are there not ?—Yes.

5749. Are there too many, do you think ?—I do not know, they abolished a rank that was termed assistant inspector, to make the first-class staff surgeon.

5750. (*President.*) But the assistant inspector was obviously an inspectorial officer, and that only, whereas the first-class staff surgeon is an executive officer, except where there is no deputy inspector, and then he becomes inspectorial ?—Most of them think that they are administrative officers.

5751. It is the business of people who are interested to persuade them that they are executive ?—Yes. I had some discussion with Lord Raglan upon that subject. He wanted them to be sent down in sick ships, and I did send down two or three when the number of wounded was great.

5752. Would there be an advantage in abolishing the rank of first-class staff surgeon ?—I do not see any great advantage in it. I would have a staff surgeon. You might increase the number of deputy-

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inspectors. You do not require a very great number of administrative officers.

5753. Would it not be rather an advantage to get rid of a class whose duties it is difficult to define ?—Yes.

5754. Suppose by that arrangement, by suppressing the class of first-class staff surgeons, and having more deputy-inspectors, you could financially speaking keep the expense about the same, would it not be an advantage to the promotion to have more deputy-inspectorships ?—Yes, I think so. The first-class staff surgeon is an important promotion.

5755. As there is so much difference of opinion in the profession as to the manner in which a man ought to be promoted from one class to the other, some thinking that it ought to be by selection, but the great mass thinking that it should be by seniority, would there not be some advantage in getting rid of one of the grades ?—I do not say that the whole promotion of the medical department should be by selection. I think that seniority always has its weight.

5756. Even in selection, seniority would have a considerable weight, because, *cæteris paribus*, the senior ought to have it ; but beyond that, you would not go ?—I think that seniority, so far as it has been advisable for the good of the service, has had its weight.

5757. You say that you do not want any great number of inspectorial officers ?—No. A staff surgeon is a much more useful man on service in this way, because you can put him in charge of a regiment, or put him in charge of a station where you do not require a first-class staff surgeon ; he would think it an indignity.

5758. The other can do nothing which a deputy-inspector will not do better ?—No.

5759. Would not the inspectorial duties be considerably lightened if the question of the supply for the hospitals were put more in the hands of the purveyor, and the responsibility of producing everything required by the patient were thrown entirely upon him ?—Yes; if you could trust to him ; but if the principal medical officer did that, he might be disappointed and left in the lurch.

5760. At present, as I understand, it is impossible to say where the responsibility rests ; but if you lay down by your instructions, that for every man introduced into the hospital, the purveyor is to produce everything necessary for the comfort of that one man, that he is to produce every diet and every extra, that he is to be under the control of the medical authority as to anything beyond that, and to be responsible for producing it ; you would relieve the medical officer of a great deal of trouble, and you would ensure to a much greater extent than now, that the patient shall be properly provided ?—Is the purveyor to be independent of the principal medical officer ?

5761. No ; on the contrary, I mean this, that instead of the medical officer writing a requisition upon the purveyor for beds and utensils and clothing, as a matter of course the purveyor shall be bound to provide those things for every patient without any order whatever ; but if anything is wanted beyond the regulation, that he should obey the medical officer ?—Does the question refer to general hospitals ?

5762. The instructions would apply to both general and regimental hospitals ?—Yes.

5763. Then take the case of a general hospital ?—But who is to be responsible ?

5764. The purveyor.—Then, suppose that an hospital is opened. There are a certain number of wards that are fitted for patients ; those wards are fitted up, and beds are laid down with everything that is necessary; but the purveyor must have somebody responsible ; he must have a receipt from the ward-master.

5765. And who is responsible now ?—The ward-master who gives the demand for them. Somebody must be responsible, or you would lose all your things. If an hospital is opened the principal medical officer tells the purveyor, you will fit up such and such wards, and put in so many bedsteads. That implies that he puts in the whole equipment ; so many chamber pots, and blankets, &c.

5766. That ought to be so, but it is not so at present, as I understand ?—There is this kind of requisition. Somebody must sign a voucher for the stores, in order to be responsible to the purveyor, if he puts them in there ; and the ward-master gives his receipt in the shape of a demand for them. You have a slip book, and that is necessary; nothing should be done without it ; the ward-master having one from the purveyor ; you cannot do away with checks of that kind.

5767. There is no doubt that when the purveyor issues things he must receive some voucher to show that he has supplied them, and the ward-master must be responsible that they are not ill-used in the ward. Why is it necessary for the medical officer to be writing requisitions for things which ought to come by regulation without any order from him ?—The purveyor in those days thought that he was not amenable to the principal medical officer, but that he belonged to the Secretary-at-War, and that was the cause of the great trouble and confusion we had.

5768. How did that affect the question—the question was between the purveyor and the patient—did the patient get the things ?—He ought.

5769. But he did not. Surely the proper person to hold as responsible and to punish would be the purveyor ?—Somebody must order the diet. The medical officer orders the diet, and if he is going to open a ward, the principal medical officer of that hospital ought to say to the purveyor, "You will fit up such a ward," and that not having been done was one of the sources of difficulty and confusion at Scutari.

5770. Instead of saying I want so many beds, all that you need say would be, I want a ward fitted up for one hundred men. Say that the ward was then fitted up, or a ward for forty patients, everything connected with each bed is supposed to be put in by the purveyor, and it ought to be perfect ?—Yes.

5771. If not put in, the purveyor is responsible ?—He ought to be, and it would be the fault of the principal medical officer if it was not. The principal medical officer ought to give the order and see that it was done.

5772. (*Sir H. K. Storks.*) But the principal medical officer should hold the purveyor responsible ?—Yes, that was done, but the purveyor must take the receipt of the ward-master, or whoever was put in charge, as his guarantee. No man who has stores in his custody will let them be put away in that way without having somebody responsible.

5773. The ward-master ought to be for that purpose his servant ?—He ought to be.

5774. (*Mr. A. S. Stafford*) Is there any change that you would suggest in the relative positions of purveyors and medical officers ?—I think that the purveyor ought to be solely and entirely under the orders of the principal medical officer.

5775. (*President.*) At the same time he ought to have his instructions, and they ought to be so complete that really the medical officer should hardly have any trouble in giving his orders, and he ought to find things done to his hand ?—Yes; but the difficulty at Scutari was that you had to create a purveying department; you had one or two men that had certainly been accustomed to the economy of England. I had one gentleman who was running about wringing his hands and saying that his family would be ruined. I was obliged to take the purveying into my own hands, I wrote to Oporto for wine, and Gibraltar, but that was no part of my business. There was a terror of responsibility.

5776. You say that requisitions must be kept up as a check in the field ; would the requisition of a surgeon be sufficient for the wants of his regiment, or would it require to be countersigned ?—It should be countersigned ; you would have the wildest recklessness possible if you did not have them countersigned.

5776. (*Mr. J. R. Martin.*) Do you mean that they should be countersigned by the inspecting officer of the division ?—Yes; I have known a regimental surgeon have in the camp in the Crimea eighteen dozen of wine, fifteen dozen of brandy, and twenty-four dozen of porter, and so on.

5777. (*Sir H. K. Storks.*) For the patients ?—Yes, nominally; but if that regiment had moved, where would it have gone ?

5778. (*President.*) Have you thought of the question of compulsory retirement, with a view to relieve the upper ranks ?—It is so now.

5779. Permissive, is it not ?—I think it is compulsory so far as this :—some years ago, a certain number of inspectorships were made, and at the end of three years those gentlemen who are appointed to them retire ; that is compulsory, I believe.

5780. Do you mean compulsory retirement after a certain age, after 35 years' service ?—That would depend upon circumstances, some are old men before others.

5781. As a general rule, would that be advantageous ?—Yes.

5782. (*Dr. A. Smith.*) Do you think that any medical officer, after having undergone the varied service that all have necessarily done, ought to be continued as surgeon of a regiment, and liable to have to perform serious operations, ought to be employed after 50 years of age ?—No, I think not, his sight would begin to fail.

5783. With reference to the inspecting officers, who are not required to do the same duty, what would be a fair age for them ?—I should think about 60 or 62, or 63.

5784. Would 65 be a fair age ?—That would be very fair.

5785. (*President.*) Is there any point which occurs to you in the course of what has passed as to which you have any recommendation that you would like to make ?—No.

5786. (*Mr. A. S. Stafford.*) What is your opinion about the pay as at present arranged ?—I think that our present pay might be increased.

5787. Will you state where you would begin the increase ?—I would begin with the assistant-surgeon. I think that in the committee that sat on that subject the recommendation that was made is a very liberal one and would be very satisfactory.

5788. It is recommended "That the pay of the "army surgeons and assistant-surgeons be increased as "may be determined by the executive government, but "this committee is in favour of 10*s.* per diem as the "pay of the assistant surgeon on first appointment." On the whole do you agree with that ?—Yes ; I think it would be liberal.

5789. Do you think that the arrangements, with regard to leave of absence, are satisfactory now ?—In all departments where the numbers are limited, you cannot have the same amount of leave as the other officers. But I think that the medical officers get leave.

5790. (*President.*) Would it not be an advantage to give them leave of absence after a certain time spent upon foreign stations, that they may come home and study in the hospitals ?—Yes, if you could ensure the study.

5791. You could ensure it by a certificate, could you not ?—The certificate would be a very feeble proof; but I think almost every one who comes home avails himself of the opportunity.

5792. (*Mr. A. S. Stafford.*) With regard to relative rank, have you any suggestion to make ?—There are certain points in it with regard to which complaints have been made ; that is, when medical officers are put on boards they have not their proper standing. They are put as junior members ; and if their opinion is required on boards, I think they ought to have their proper status on them.

5793. With regard to honorary distinctions, have you any suggestions to make upon that subject ?—The government have now given them, and they are great incentives to exertion, and very gratifying to the department.

5794. You think that that change is an improvement ?—Very great.

5795. (*Mr. J. R. Martin.*) A change had become necessary, in fact ?—Yes; great dissatisfaction was felt.

5796. The requirements of the service had made the improvement necessary ?—I think so.

5797. (*President.*) No man can get the Order of the Bath, I suppose, in your profession unless he has been under fire in the field ?—I think that he must have been mentioned in a despatch, and he must have been engaged in front of the enemy, but a medical officer must be under fire occasionally.

5798. A man may be exposed to a great deal more danger in a general hospital at the rear where there is a great deal of contagious illness than in the front under fire, and doing much more irksome duty ?—Yes ; they would stand their chance. They are not fighting men ; but they are exposed to fire.

5799. (*Mr. J. R. Martin.*) The position of the regimental medical officer is, I believe, fifty paces in the rear of the corps in a general action ?—No ; you generally send one assistant-surgeon in with a regiment ; and the surgeon remains in the rear to attend to the wounded. He is generally out of musket range.

5800. (*Sir H. K. Storks.*) Would it be desirable to allow a medical officer under special circumstances to reckon two years' service for one ? suppose for instance, that he has passed one year in a very deadly climate, for either service or distinction ?—I think so ; I think in unhealthy climates that would be a great boon.

5801. (*Mr. T. Alexander.*) In war time would you suggest the same thing ?—It would be hard upon others, who have not had the same opportunity to do that.

5802. (*Mr. A. S. Stafford.*) All the medical officers in the front were under fire, were they not, more or less ?—Not all.

5803. Were all that were recommended for promotion under fire ?—I do not know ; I think that most of those that I did recommend were under fire ; they were not recommended for that specially, but all the officers that were noticed I reported.

5804. (*President.*) You cannot draw the distinction whether the men were under fire or within reach ?—No, that does not form part of your duty ; there are certain points that you are obliged to lay down ; for instance, in all the assaults I was obliged to order a given number of medical officers into the ravines, and those took up certain positions not directly under fire.

5805. (*Mr. A. S. Stafford.*) But none were decorated but those under fire ?—They must have been present at an action, and they were all under fire more or less.

5806. Take the case of Dr. Mouat ?—He was in the Balaklava charge. You must be mentioned in a despatch ; and after every action it was my duty to bring under Lord Raglan's notice all officers who had been conspicuously noticed, which I invariably did. It is presumed that no man would be so noticed unless he had been on active service.

5807. (*President.*) You approve of the general scale of pay proposed by Dr. Smith ?—Yes, I consider it a liberal scale, and it would be satisfactory.

5808. Do you think that the doctors ought to have servants from the ranks ?—That was refused, and they increased the pay. I think they ought to have them.

5809. You are allowed the money for a civil servant ?—Yes, but we are only allowed for one.

5810. (*Sir H. K. Storks.*) Do the regimental surgeons have servants from the ranks ?—Yes, I was only allowed for one servant.

5811. (*Mr. T. Alexander.*) You were entitled to have eight horses ?—Yes ; but they allowed only 3*s.* a day for servants, and every servant that I had cost me 3*l.* a month ; to one I gave 5*l.* I could not get them for less.

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5812. (*Dr. A. Smith.*) Is 1*s.* a day the sum now allowed to a medical officer to provide himself with a servant sufficient ?—Not without he is fed.

5813. What would be a fair allowance to enable him to keep a servant attached to him, who might go anywhere with him ?—For one servant I think 3*s.* was fair enough ; but you give one servant to all the officers; you give to an acting assistant-surgeon one servant, and one servant to the inspector-general of hospitals.

5814. (*Sir H. K. Storks.*) What does a medical man get now as an allowance for a servant ?—One shilling a day.

5815. Does the servant draw rations ?—Not here, but you get 1*s.* 6*d.* abroad to cover the charge for his rations.

5816. What is the charge ?—Sixpence for a civil servant.

5817. (*Dr. A. Smith.*) If the government allowed 2*s.* a day it would be a fair allowance ?—In England.

5818. Or in the colonies ?—That depends on where you go ; the wages of servants vary so.

5819. (*Mr. T. Alexander.*) Do you not think that you might have servants from the medical staff corps ? —There is this difficulty; supposing you are supplied from the medical staff corps, if you go to the West Indies and your servant falls sick, what are you to do with him ?

5820. (*President.*) Would he not join whatever detachment of the medical staff corps might be there ? —I do not know that it would be desirable to send them out there.

5821. (*Dr. A. Smith.*) How would you replace the servant in the meantime ?—I say, supposing he is taken sick, what are you to do ?

5822. (*President.*) Is there anything that occurs to you upon which you could make any suggestion or recommendation to the Commissioners ?—Nothing at this moment.

The witness withdrew.

Colonel the Hon. J. Lindsay

Colonel the Hon. James Lindsay examined.

5823. (*President.*) What rank do you hold in the Guards ?—Captain and lieutenant-colonel, and acting-major.

5824. Have you ever been adjutant ?—Yes, for nine years.

5825. Were you a member of the barrack committee that made a report in the year 1855 ?—Yes.

5826. You were the chairman of it, were you not ? —No ; Lord Monck was the chairman.

5827. Do you hold to the opinions expressed in that report ?—All except one, which I remonstrated against.

5828. Which is that ?—The introduction of spirits into the canteens.

5829. I see that you speak in the report of the necessity of a great change in point of ventilation in the barrack rooms ?—Yes.

5830. I suppose you could speak upon that subject from personal experience, having been into the men's rooms at night ?—Yes.

5831. What is the state of the ventilation ?—It is very much improved so far as my information goes in the last two or three years ; but that improvement has been caused by the reduction of four men in the barrack room,—by the diminution in number.

5832. (*Mr. A. S. Stafford.*) Not by any improvement in the ventilation ?—There is a new barrack lately erected, which has been just occupied, in the Wellington barracks, which has an improved ventilation, and I hear it spoken favourably of, but I have not had any personal experience of it ; the men have not been long enough there to report upon it.

5833. (*President.*) I suppose that your barracks may be assumed to be better than those of the line ?— No ; I think the reverse ; the barracks of the line vary very much in different stations, but we have nothing approaching some of the new barracks that have been built for the line at Sheffield and Preston, the new barrack at Portsmouth, and I think one now building for them at Devonport, but the generality of our barracks are bad on the whole, though they are improving.

5834. You proposed, I see, that in every sleeping apartment there should be an ablution room fitted with basins, and water laid on, and separate portions boarded off where the men could wash themselves entirely ; has that ever been done ?—Yes ; that is done in this new Wellington barrack ; there are in each ablution room two places boarded off, but the ablution rooms of the old barracks are all excessively bad, though they have erected in the Wellington barracks, in the old ablution rooms, some baths.

5835. Do the men like to use them much ?—Yes.

5836. How do they manage ?—They go at different times.

5837. In the course of the day ?—Yes, they suit themselves.

5838. You recommended a change in the means of cooking, to produce variety ?—Yes, I think that a very important element in health.

5839. It has been stated by one of your men, a non-commissioned officer of the Grenadiers, that the men are in the habit of sending meat out to be baked, either paying in money for it or by diminishing the quantity of vegetables ?—Yes, that is so. They attach great importance themselves to having a variety of messing.

5840. Have you, in the new Wellington barracks, any baking machine ?—Yes ; and at present it is used more than the boilers.

5841. (*Mr. A. S. Stafford.*) Are the Grenadiers there now ?—Yes.

5842. (*President.*) You propose that there should be, besides that, a bakery for baking bread ?—Yes, in order that the men may be taught in baking bread ; it may be useful for them on service.

5843. Has it ever been done yet ?—I think not.

5844. (*Mr. J. R. Martin.*) There is a professed baker now ?—I think there ought to be a professed baker in every company when, if they were driven to it, they would have the power and know how to bake bread.

5845. (*President.*) You propose that privies should be provided for the men in the proportion of six for every 100 men, and that the seats should be divided, has that ever been done ?—No, except at Aldershot.

5846. Are they still undivided with you ?—Yes, they are the same privies as they always have been ; there has been no change, but I believe it is intended.

5847. Is there any change in the practice of having the urine tub in the barrack room at night ?—No, that still continues.

5848. Is not that a very great nuisance ?—Yes, I think that might be abolished with very great facility; there is no reason why chamber utensils should not be provided.

5849. Will not the men break them ?—Yes, but the expense is not so very enormous. I have had experience of that at the small barracks at Windsor where chamber-pots were used. We were there about a month, and at the end of that time some two or three were broken. But metal ones might be served out.

5850. And they were paid for as barrack damages. were they not ?—Yes.

5851. With regard to games, I see that you have made recommendations for racket-courts and ball-courts ?—I think it is a very important element in the health of the soldier, or if I might be allowed to say a few words upon that, I think that the soldier

suffers perhaps more than any living individual from ennui; the very nature of his duty places him in that position; he has not any employment excepting his drill and his duties, and you cannot increase that.

5852. Will you just describe how the day is occupied in your regiment?—If you take London, the soldier gets up at six and breakfasts at seven.

5853. (*Sir H. K. Storks.*) What does he do before breakfast?—There is no drill before breakfast; he makes up his bed and cleans his things; he gets his breakfast at seven o'clock, and he then turns out for drill about half-past seven or eight, as the case may be; he then has his morning's drill, which may last about an hour or an hour and a half. When the battalion finds the public duties, there is no drill except for defaulters; but the men for duty are paraded about ten o'clock. Then that finishes his day's drill altogether; but then there are a certain number of recruits, a certain number of defaulters, and a certain number of soldiers, who are not accomplished in drill, they have it again in the afternoon. Then there is the evening parade, where a certain amount of practice at drill goes on to complete the education of the soldier; that takes about half an hour, and then his time is his own until tattoo, and that is at nine in winter and ten in summer.

5854. (*Mr. A. S. Stafford.*) That is the history of the day of a soldier not on guard?—That is the history of the day of a soldier not on guard so far as regards the duties which he is obliged to perform.

5855. (*Mr. J. R. Martin.*) The whole of the remainder of his time hangs very heavy on his hands?—Yes; then there is something further, there is a certain body of them who are taken off duty for other descriptions of instruction; there is always some instruction going on in the exercise for the minie rifle; we have a company out at a time, and sometimes two companies out at a time; those men are taken off duty, and they have, perhaps, three hours in the morning and three hours in the afternoon at work.

5856. (*Sir H. K. Storks.*) Do not your men go to school?—Yes; but they are not obliged to go.

5857. (*President.*) Only the first six months?—The order till last Saturday was, that a man was obliged to attend school until he was dismissed his drill as a recruit; the time was uncertain, sometimes it was three months and sometimes four; afterwards they were not compelled to attend school until they were non-commissioned officers, and then they were all obliged to attend school. The attendance at school is entirely voluntary.

5858. What is the change now?—That all the men are to attend school until they are dismissed as fit in reading, writing, and arithmetic.

5859. If not fit they will go on attending school?—Yes, until they are dismissed. In consequence of the nature of his position the soldier has necessarily a great deal of idle time on his hands, and of course if he is idle it naturally leads him into mischief, at least he has an opportunity of getting into mischief. If you were to give the men more military occupation, more military duty, it would disgust them and you could not do that; you cannot employ their time in a greater amount of duty than at present, except at Aldershot, where they are throwing up works; if you do that you will disgust them; and the reason of that is that all the soldier has to do is under restraint; it is not like a working man or an artizan, a working man digs and his mind is his own, and an artizan is interested very likely in the work in which he is engaged, but a man in the position of a soldier must give you all his attention, and there is a great deal of physical demand on him in consequence of the weight which he carries; all these things make me think that it would be impossible to ask him to do more duty or drill than he is now called upon to perform.

5860. (*Mr. J. R. Martin.*) Nor would it be desirable, if you could?—No; I think that too much drill and too much duty are wearisome and fatiguing.

5861. (*Mr. A. S. Stafford.*) Therefore you think that the attention of those who have the welfare of the soldier at heart, should be directed to the means of keeping him out of dissipation in the hours of his leisure?—Yes, exactly; that is what I want to come to; he has a considerable amount of leisure, and I think that it ought to be the duty of the government, and of those who are in authority, to endeavour to provide for him as far as possible the means of recreation. I think that the great object should be that the barracks should be made as far as possible the home of the soldier, and that you should give him pursuits inside the barracks instead of tempting him outside.

5862. Do you consider that that would be conducive not only to his moral, but also to his physical health?—Certainly; I think that the action of the mind would be almost as conducive to health as the exercise of the body.

5863. And that it would diminish dissipation?—Naturally so; I can speak from experience that where you have opportunities of employing the men, you decrease the dissipation; if you give them amusement, they take an interest in it.

5864. (*Mr. J. R. Martin.*) Along with that decrease you have a decrease of illness and crime?—Of crime, certainly, and as to illness, I should think that would follow. It would be rather difficult for me to trace that, because the illness in London, and the illness that one has in the country, where we are able to give them some amusement, are so very different.

5865. (*Sir H. K. Storks.*) You say that your men are obliged to be in barracks at nine in the winter, and at ten in the summer; is the tattoo over at those hours, or does it begin at that hour?—It begins at that hour.

5866. Generally the men are not in until half-past ten in summer, and half-past nine in winter?—Yes, it would be about half-an-hour before the lights are out.

5867. Is that the case wherever the brigade of Guards may be quartered?—No; the usual time in the rest of the army is eight in winter, and nine in summer.

5868. Is that settled by a brigade order, or how?—That has been so from time immemorial.

5869. One would naturally suppose that in a place where there is so much dissipation, there would be an object in getting the men earlier into barracks than in the country?—It is impossible to say what it would have been if it had not been so; I think that in London where you have no hold upon the men when they are out of barracks the chances are that they would stay out. It is only moral control and effect of discipline that keeps the men together in London.

5870. In the Queen's regulations for duties in garrison, the tattoo is to beat at eight in winter, and at nine in the summer season, after which no soldier is to be out of his quarters; consequently, London being a garrison, the Queen's regulations as to the barracks of the Guards are not followed?—Just so; but London is not a garrison in the usual acceptation of the word "garrison."

5871. Suppose that a battalion of Guards are in the country, do they return to their barracks at ten in the summer, and nine in the winter, as they do in London?—No, at eight and nine. They conform to the usages of the district wherever they go.

5872. Supposing a battalion of Guards went to Manchester, how would it be then?—It would be whatever the General of the district pleased.

5873. (*Mr. A. S. Stafford.*) How is it at Chichester?—Where we should be alone, we should keep up our London habits.

5874. (*Sir H. K. Storks.*) At Windsor, how is it?—At Windsor the same.

5875. (*President.*) Among the recommendations which you made in this report there is one as to the creation of a day-room in barrack; that was with a view, I suppose, to the occupation and amusement of

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the men ?—Yes. I think that you want an extra room attached to every one or two companies, or a large room attached to a barrack, where men may be able to sit and read, or play at draughts, or enjoy themselves and smoke.

5876. The question was put the other day to an officer, and he said that he did not see what the men would do with a day room ?—We had a little experience of that the other day before the new Wellington barracks were occupied. There were two new school-rooms built in the Wellington barracks for two battalions, and before the new part of the barracks was occupied, the battalion that occupied the old part had the use of the extra school-room, and a very large room it was ; I should think 50 feet by 30, that is about double the space that there is in any reading room that I ever saw attached to a barrack. It was watched to see whether this room would be used, and it was crammed, even that large room, so that there was not room for the men.

5877. How was it fitted up ?—With forms and benches up and down the room. Now it is a school-room.

5878. Can the men use it in the day as a day room ?—Yes.

5879. When do they use it ?—They do not use it now ; that was before it was opened as a school.

5880. Was it in the day time or at night ?—Both.

5881. Was it lighted with gas ?—Yes.

5882. (*Mr. A. S. Stafford.*) What did the men do there ?—They read, and took their books there, and smoked.

5883. Had they any games there ?—Yes ; draughts, and dominoes, and those sort of things.

5884. Do you allow cards there ?—Never.

5885. You do allow smoking ?—Yes, we always allow smoking in our reading rooms.

5886. Do you think that that is a good plan ?—Yes.

5887. (*President.*) Do they get coffee ?—I should think most likely they do. There is another battalion there now. We did that in our own reading room, but it has been discontinued since the establishment of an evening mess.

5888. Of all the causes to which the mortality in the Guards is attributed, the night duty is the most prominent, is it not ?—I should say that it was the most prominent, other causes assisting it.

5889. That is, the bad plan of the barrack, and the dissipation of the men ?—Yes.

5890. Those being the three causes of mortality ?—Yes.

5891. Will you describe what amount of night duty in the Guards is ?—At the present moment it runs about four nights in bed to one out.

5892. That is, at the Wellington barracks ?—That is among the three battalions doing duty in London.

5893. (*Mr. J. R. Martin.*) From one year to another ?—The year round. That is more than we used to have.

5894. (*President.*) Does that include the time that they are out of London ?—No. Then they have little duty to do.

5895. How is it at Windsor ?—That is fully as hard as in London, because one battalion is doing duty every day.

5896. Is the night duty of the battalion doing duty at the Wellington barracks, the same as that of the battalion doing duty at the Tower ?—In consequence of the reduction of the sentries in the Tower, the Tower duty never was so light as it is now.

5897. The guard at the Bank is sent from the Tower ?—Yes.

5898. (*Sir H. K. Storks.*) How many nights in bed have the men at the Tower ?—Four.

5899. (*President.*) One night on duty and four in bed ?—Yes.

5900. That is very light, is it not ?—Yes ; we think it so. But my own opinion is, that under any circumstances, particularly where the duty is constant, it never ought to be under that.

5901. (*Sir H. K. Storks.*) It is lighter than the line ; the average of the line does not come to anything like four nights in bed. I think it is three nights in bed ?—But it varies. The duty is as hard at Portsmouth. I do not think it is as hard in Dublin ; but it is at Plymouth, and at some other stations ; but then at a great number of stations the duty is not hard. It is very little more than barrack guard at by far the majority of stations.

5902. (*President.*) In speaking of this number of nights in bed there has been a considerable change since you were adjutant in the Guards ?—It has been reduced. I remember it three, and two and a half it has been on occasions.

5903. Now it is habitually reduced to the number you have mentioned ?—Yes ; it is about four I think.

5904. Is that occasioned by the diminution of that duty, or an increase of the strength of the battalions? —A little of both.

5905. So that any fluctuation in the bayonets would increase it again ?—Yes.

5906. (*Sir H. K. Storks.*) Have you any inlying picket ?—Yes ; but they go to bed.

5907. Are pickets out at night looking for absent men ?—Yes ; not all night. After a certain time they know it is impossible.

5908. But they do go out when men are absent at tattoo ?—Yes.

5909. (*President.*) How is this night duty done as to the hours ; how many hours is a man on sentry duty at a time ?—Two hours.

5910. And then he is relieved ?—Yes.

5911. How long is it before he goes on again ?—The guard is divided into three reliefs ; he is four hours off and two hours on.

5912. (*Mr. A. S. Stafford.*) Is the state of the guard-rooms satisfactory ?—No. I think that they are very unsatisfactory ; they are not ventilated at all.

5913. (*President.*) A man goes to sleep in the guard-room before he goes out ?—Yes.

5914. He lies down in his great coat and goes to sleep ?—Yes.

5915. And the room is very hot and close ?—Yes.

5916. And then he goes out into the open air, having been perspiring in his sleep ?—Yes.

5917. Have you watch cloaks in the guard-room ? —Yes.

5918. (*Mr. A. S. Stafford.*) Do you think that some sentry stations are more unhealthy than others ?—I should think that some of them are.

5919. (*Sir H. K. Storks.*) Have you any notion of the cubic space allowed to each man in the guard-room ?—No.

5920. (*Mr. J. R. Martin.*) Have the improvements in ventilation that you speak of as having been introduced into the new Guards barracks been applied to the old ones ?—I do not think that there have been any alterations in the old ones ; but there is a greater extent of ventilation, as it appears to me, in the new barracks than there was in the old.

5921. (*President.*) Do the men suffer in barracks through more being put in a room than it is intended to contain ?—Not now. It has been the case to a very considerable extent in many stations, that the commanding officers have found, that in consequence of the deficiency of barrack accommodation they have been obliged to put more men in a room than it was told off for. That, of course, added naturally to the inconvenience, and to the vitiated state of the atmosphere.

5922. (*Dr. A. Smith.*) Do you know whether medical officers have ever found it necessary to represent that as having happened ?—Certainly, they have represented it to the commanding officers, and the commanding officers have represented it, and in some cases the commanding officers have been obliged to reduce the numbers, but it has been always caused by a deficiency of barrack accommodation for some

particular objects, which drove them to put more men in a room than they ought to have done.

5923. (*President.*) To give more space to non-commissioned officers?—Until lately there was hardly any room told off for non-commissioned officers—married non-commissioned officers and pay-serjeants. They have stores, and you must find some place where they can live with their wives.

5924. Do you take any women into the barracks at the Wellington barracks now that you have your model lodging-house?—We have the serjeants. There is more married accommodation provided now than there was previously.

5925. But those who marry with leave are put into the lodging-house, are they not?—Yes; if they choose to go in.

5926. Do they choose it?—Yes, they have been very well filled lately.

5927. Do you maintain in the Guards the rule of not giving leave to marry except to a limited number?—Very strictly; we adhere to that in all the Government allowances, but if a man marries without leave and keeps up his character for two or three years afterwards, and he is generally speaking a good soldier, we give him a share in the company's washing to keep him.

5928. (*Mr. J. R. Martin.*) Is not the number which every room will properly hold written on the door by the engineers' department?—Yes.

5929. You never exceed that number?—We have not now that there is more accommodation; but we have had 18 men in a room for 16.

5930. (*President.*) The lodging-house is entirely under the management of the regiment, is it not?—Entirely under the management of the officers of the brigade.

5931. It was an arrangement made by yourselves out of your own funds?—Yes; we raised the money to build it.

5932. (*Sir H. K. Storks.*) How much a week do they pay for this accommodation?—From 2*s.* to 3*s.* 6*d.* The rooms vary in size.

5933. (*Mr. J. R. Martin.*) Is it esteemed a great boon by the men?—Yes, it is now; they were afraid of it at first; they did not like to go in at first not knowing that they would have their full liberty there in the same way as if they had been in lodgings.

5934. (*Mr. A. S. Stafford.*) What is your opinion of the present knapsack, could it be improved?—I have seen so many attempts at improving the knapsack which have failed generally, but my own opinion is that the best knapsack that I ever saw put upon a soldier's back is Berrinton's knapsack.

5935. (*Mr. J. R. Martin.*) Has not it been proved absolutely by a practical test to be unexceptionable?—We have tried it ourselves, and the men individually who have tried it have reported favourably of it, and I think the best plan would be to serve it out to 500 men and let them wear it.

5936. (*President.*) The great point is in the slinging of it, rather than in the knapsack?—There is a strap that is fixed at the back of the knapsack on the one side, and to a yoke upon the other; the yoke is in the front, and the weight strikes the man down perpendicularly upon the cross of his body.

5937. (*Mr. J. R. Martin.*) But it is suspended higher than the old knapsack?—Yes; in consequence of this purchase it is higher, and you get the weight the better, and there is one additional object in it that a man is unfettered in his arms. The weight of the present knapsack presses very much upon a vein, and he gets numbed from the knapsack strap pressing constantly on the vein of the arm.

5938. (*Sir H. K. Storks.*) Is it better to carry the great coat flat or rolled on the top?—I think it is better rolled.

5939. Does not that make it much hotter, as there is no circulation of air?—One would say yes, to that; but at the same time, if you consult the men I think they would prefer it rolled.

5940. Is there not this disadvantage, that when a man has been out all night, and his great coat gets wet, it is next to impossible to roll it?—We have abolished the old roll, and established a new roll. The disadvantage of the old roll was, as you have just now said, that it always required two or three men to do it; but we have established a new roll, which is not so beautiful, but which is equally effective; and I think as to the wet, we have often had it put up when wet; there is a little more difficulty then, but I think that that objection falls to the ground in the new description of roll.

5941. He carries it on his pack, does he not?—He did so, but not now.

5942. (*Mr. J. R. Martin.*) Can a man roll it up himself?—Yes.

5943. (*Mr. A. S. Stafford.*) Do you think that the shape of the shoes is the best that could be worn?—I think, generally speaking, that the blucher, if it does not fit well, is a very inconvenient thing to walk in.

5944. (*Sir H. K. Storks.*) Would a laced boot be better?—That takes time.

5945. What do you think of the great coat, is it a serviceable garment for the soldier; would not a lighter description of coat and made of a better material, be better for marching and for parade?—I prefer it as it is at the present moment.

5946. (*President.*) It has been suggested that whatever the boot is it should be capable of being laced over the trousers, so as to gather the trousers in and prevent them from catching up the mud, as the French do their gaiters; would that be a good plan?—I should hardly think so, and for this reason, that when you wear a boot with the trouser over the boot, you would not be able to get it comfortably tight round the ankle.

5947. I mean a laced boot in lieu of the blucher?—I prefer a gaiter, if you could give it them.

5948. (*Sir H. K. Storks.*) Then you would have the inconvenience of lacing it?—Why not have the gaiter and the blucher? The shoe is not a good thing.

5949. Do you consider that socks are essential as part of the soldier's equipment, or that a man would be equally serviceable without them?—I think that he would be equally serviceable without them, but as an article of cleanliness on home service, of course I should not like the sock done away with.

5950. (*President.*) If a man's leather shoe or boot is wet, is not a woollen substance between the wet leather and his foot an advantage to him even if that is wet too?—I never tried it, but a great number of the men who enlist have been in the habit of never wearing shoes even, and many march without them.

5951. (*Dr. A. Smith.*) Would not a man's feet chafe if he had no sock on?—I should think that a darned stocking was a considerably worse thing than to have none at all. I think that on service you would very soon have your stockings all in holes.

5952. Have you often found that when a man's sock got worn out on the march his toes got chafed by the leather?—Yes. It appears to me that that is rather a question of experience, and it is difficult to conjecture what might be the result.

5953. (*Sir H. K. Storks.*) What do you think about flannel shirts; do you think that they are better than cotton shirts?—Yes, I do; but it is not popular.

5954. You would do away with the cotton shirt?—Yes; and substitute flannel.

5955. (*President.*) Your men wear a flannel waistcoat under the cotton shirt, do they not?—Some do, but it is not general.

5956. (*Sir H. K. Storks.*) That is a private arrangement, and not a part of the soldier's necessaries?—Yes, unless it is ordered by the surgeon.

5957. (*Mr. T. Alexander.*) On service you would always have flannel?—Yes.

5958. (*Mr. J. R. Martin.*) You would advocate a flannel shirt everywhere?—Yes; I think that with the duties that the soldier is called upon to perform,

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where they have heat and cold to encounter, flannel shirts are best.

5959. You say that it is not popular among them ?—No ; the moment that the men could go back to cotton they did. Flannel is more expensive, but it would last double the time that cotton does, and it is cheaper in the end. I think that a flannel shirt would be a higher price than two of cotton. It is not so smart either, and a flannel shirt becomes rather a dirty-looking article, do what you can.

5960. (*President.*) When you say it is not smart looking, it is worn underneath ?—A soldier likes being clean in barracks as much as he does out.

5961. (*Dr. A. Smith.*) Is it not rather more bulky than a cotton shirt ?—Yes, it is more bulky.

5962. Does not it accumulate more dirt than a cotton shirt ? the urine drops on a flannel shirt and stains it?—Yes, there is more difficulty in washing it, but if there was a higher class of washing that might be avoided.

5963. (*President.*) Do you think that it would be an advantage to the soldier to have one uniform stoppage, combining the present commissariat stoppage and his messing stoppage, and that you should supply him with everything requisite for his three meals ?—There is one part of the soldier's mess which he is excessively fond of laying out for himself, and that is his vegetable money.

5964. He does not buy it at the canteen ?—He goes where he pleases with us.

5965. I think a description was given to us that he bought his butter and herrings himself at the canteen, but the company settled where he should get his vegetables, and they were bought by the pay-serjeant ?—Yes, the company select where they shall buy those articles, and then the corporal and swab, representing the company, and the cook the kitchen, go for them.

5966. When the army went to Bulgaria that system broke down, did it not ?—Yes.

5967. It was forced on the commissariat, who were not used to that work, and they did not do it very successfully ; would it not be an advantage to make as little change as you can, so that you should have the system in peace as like as possible to that in war ?—Yes, so that there would be no changes when the war commenced.

5968. The men have gained, have they not, in point of quality in the supply since the bread and meat have been supplied by the commissariat ?—They have gained in one way, in cheapness.

5969. Have they not had meat of a better quality ?—We have never had any complaints of either system.

5970. (*Mr. T. Alexander.*) Would it be better to give the soldier a sufficient ration to keep him in health, than to let him purchase what he may not be able to get as his ration ?—I think so, as a system of general policy. I think that there is a satisfaction which the soldier has in adding to the luxury of his own mess. Sometimes they stop their vegetables ; sometimes they have a very small quantity of vegetables, and the extra money for the vegetables goes to pay for the baking of their messes.

5971. That is a disadvantage surely, as a certain quantity of vegetable food is necessary, in proportion to the amount of animal food, and if the men with a view to get their dinner baked stint themselves from vegetables they do themselves harm ? — An exceptional day would do them no harm.

5972. It is a question of degree, but still on that day a man does not get that vegetable food which he ought to do ?—No, but at the same time this is to be remembered, that unless some improved system of cooking is given to us, and the government should serve us out with vegetables instead of the soldier buying them, then we should have nothing else but Irish stew day after day.

5973. I assume that the government supplies in every barracks ovens as well as coppers, so that they might have alternately baked and boiled food ?—I think that as a matter of policy, to avoid a change upon service, you must put it all on one system.

5974. You would then have a great diminution of accounts, as there would be no such thing as stoppages ?—Yes. It would be 7*d.* a day instead of 4½*d.* The men's pay would be 6*d.* and the ration under all circumstances.

5975. (*Dr. A. Smith.*) Do you think that the allowance of three quarters of a pound of meat for one of your stalwart men is sufficient animal food for him daily ?—Yes, I think it is with all the other extras that he adds to it, his soup and his vegetables.

5976. The soup takes away the strength of the meat ?—Yes ; I do not think it is enough. I know that this happens, that we are obliged to work the meat so as to give in the course of seven or eight days a fair turn to each company as to the amount of bone, consequently some days they are short of absolute meat. They may get enough soup, but I think it is hardly enough of meat.

5977. (*Mr. J. R. Martin.*) It is necessarily very deficient on active service ?—Certainly, much more so.

5978. (*Mr. T. Alexander.*) There would be one advantage on active service if you established a certain ration, that you would have vegetables and everything there, which while in the field at times you cannot get. Would there not be an advantage in that ?—Certainly.

5979. (*President.*) Do they ever leave any of the meat ?—Yes, they do sometimes at dinner, and finish it at other times.

5980. Do you suppose that that is from their being weary of the monotony of it ?—Yes, I do ; and from their having no appetites, the want of appetite being caused by the hot barrack-room at night, and a certain amount of night duty which affects the constitution.

5981. (*Mr. T. Alexander.*) At the same time the food not being sufficiently varied, palls the appetite ?—Certainly ; that is a very important point. It ought to be constantly varied.

The witness withdrew.

Adjourned.

Wednesday, 24th June 1857.

PRESENT :

The Right Hon. SIDNEY HERBERT, M.P.
A. S. STAFFORD, Esq., M.P.
Colonel Sir H. K. STORKS, K.C.B.
Dr. ANDREW SMITH.
T. ALEXANDER, Esq., C.B.
Sir THOMAS PHILLIPS.
Sir JAMES CLARK, Bart.
J. R. MARTIN, Esq., F.R.S.
Dr. JOHN SUTHERLAND.

PRESIDENT, The Right Honourable SIDNEY HERBERT, M.P.

ALEXANDER JAMES MOORHEAD, Esq., examined.

A. J. Moorhead, Esq.

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5982. (*President.*) What office do you hold at Chelsea?—That of secretary to the commissioners and registrar of out-pensioners.

5983. How are the commissioners constituted?—By patent from the Queen.

5984. Consisting of whom?—At present there are the four secretaries of state; the paymaster-general is the chairman of the board. I am not quite sure whether Sir Benjamin Hawes now is one.

5985. The secretary-at-war I suppose is now, only he is merged into the office of the secretary of state?—Yes, the following is a list of the commissioners: The president of the council, the first commissioner of the treasury, the four secretaries of state, the paymaster-general, the governor and lieut.-governor of Chelsea hospital, the adjutant-general and quartermaster-general, the deputy secretary at war.

5986. The paymaster-general is always the president?—Yes; he is vice-president of the Board of Trade as well.

5987. The secretary of state for war has no other authority than that of an individual member?—As a commissioner only.

5988. The men who apply for an out-pension, at Chelsea, have been invalided and discharged before?—Yes; with just this difference, that there are a number of days left, to be filled up from the date of their discharge at Chatham, or elsewhere, until the pension is fixed, which is every Tuesday.

5989. You have nothing to do with the discharge, or the invaliding?—Nothing whatever.

5990. Were they ever discharged at Chelsea?—In very bygone days, when the Commissioners had the power of transferring them to veteran or garrison battalions, I can see that they gave them a pension, or ordered a man to any particular battalion.

5991. That was done away with?—Yes.

5992. And the discharge of soldiers, at Chelsea, was done away with about 20 years ago?—Yes; when Lord Howick was secretary-at-war, a number of members of Parliament had complained of the nuisance of men coming there from Chatham; I should mention, that the invalid depôt was formerly at Chelsea.

5993. Why was that done away with?—It was done away with so far as the men were concerned who were received at the invalid depôt, because of the necessity of quartering them in the neighbourhood of Chelsea for two or three days. They were billeted in the low public-houses about.

5994. What is the present practice?—The present practice as regards all the men that arrive at Chatham—and those form about three-fourths of the whole of the men invalided—is for them to be taken to the invalid depôt at Chatham.

5995. Do the household troops attend?—Yes; all the men of the guards, both horse and foot, attend in person at Chelsea hospital. All the invalids discharged from the army in Ireland, with the exception of those from the Guards, appear at Kilmainham and are seen by the governors, who report upon their cases to Chelsea.

5996. In the East Indies is that so?—In the cases of men discharged in the East Indies, Cape of Good Hope, and the other colonies, for the purpose of residing there, their discharge documents are forwarded to the commissioners.

5997. In those cases the discharge papers are sent to you, and you judge what the rate of pension should be?—Yes; it is done by the secretary-at-war, who conveys Her Majesty's authority to dispense with their personal attendance.

5998. In Ireland, that is the rule?—All men discharged in Ireland are sent to Dublin for the purpose of appearing for examination before the governors of Kilmainham hospital.

5999. No pension is granted in Ireland?—No, they are granted by the commissioners of Chelsea Hospital on a recommendation from the governors of Kilmainham.

6000. Do those recommendations confine themselves to the invaliding, or do they recommend the rate of pension?—They recommend the rate of pension according to their view of the warrant, but which rate is frequently changed by our board.

6001. Do you secure for the colonies, England, and Ireland, a perfect uniformity in the rate of pension?—Yes, as far as we can; that is the great object.

6002. What becomes of the men between the time of their discharge and the time when your decision is made as to the rate of pay?—All the men at Chatham, or at Woolwich, and I presume the Guards in the same way, receive at the rate of 20 days' pay, and in Ireland 24 days' pay, and they have a passage provided for them home. We notify that through the War Office, and we inform them the rate of pension fixed upon, and the staff officers of pensioners then receive instructions to pay them at the end of those 20 or 24 days.

6003. Are pensioners in Canada, Australia, New Zealand, and Van Diemen's Land always paid from the office of pensioners?—Yes, in Canada, not at the Cape. In Van Diemen's Land and New Zealand they are. At the Cape of Good Hope they are paid through the commissariat, and in India through the East India Company.

6004. What number of cases come before you annually?—They have varied very much lately. For the 10 years ending December 1854, the average number was about 4,000 men. In 1855 there were examined at Chatham 3,217. At Chelsea, of the household troops, 336; at Kilmainham 280; artillerymen who were seen at Woolwich 463; upon dispensing authority 237; to reside abroad 117; negroes, and from other sources altogether in that year, 5,155. Last year 1856, 8,943, owing to the war and the reductions, and this year up to the present date we have had 4,457.

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6005. Were those reductions all made for disability?—Yes, combined with service, or for service alone; but many then, besides the numbers above enumerated, were discharged direct from their regiments at the late reduction, without their cases coming at all before the commissioners, in consequence of general unfitness for service as soldiers and having served but a short time.

6006. (*Sir H. K. Storks.*) No man appears before the Chelsea board, unless he has a right to a pension?—Yes. Of the numbers I have mentioned, there were in the year 1855, 337 rejected, and in the last year there have been 1335 rejected.

6007. They claim the pension, but it does not follow that they get it?—No.

6008. No man discharged for short service, or for any cause that does not entitle him to a pension, appears before the board?—A man has little choice about it. He is sent to us by the desire of his commanding officer, who rather thinks that he has a claim. We have many cases years after a man's discharge, in which he does claim, and we say, Why did not your case come forward at the proper time? Sometimes that happens, as it did on the reduction after the Peninsular war.

6009. (*Sir Thomas Phillips.*) In the ten years which averaged 4,000 a year, were the numbers pretty equal in each year?—Very nearly equal for ten years; and it might have been some years before that.

6010. The difference was not great in those ten years?—No, it was not.

6011. (*President.*) As I understand you, there are no pensions granted by anybody except by the Chelsea Commissioners?—None whatever.

6012. Is that found to be very useful for persons making inquiries as to the existence of pensioners?—We have an immense number of inquiries after pensioners in consequence of all their discharges being deposited in Chelsea hospital, and it affords great facilities. We have inquiries from all departments, from the War Office, Commander-in-Chief's, from the adjutant-general's office, &c.

6013. Have you experienced any difficulties as to a decision upon the merits of each case which could be removed in any way?—With regard to the manner in which disabilities are described, that is to say on the old principle, we do very frequently meet with difficulties by their not stating distinctly in cases of accident how it occurred; whether it was the effect of service or not. Dr. Maclachlan is better able to answer the Commissioners upon that point than I am, as it is more his duty; but it is equally mine to see that the man has a claim on account of service.

6014. (*Sir H. K. Storks.*) Do not you get a medical report in every case?—Yes; but they are very frequently not sufficient; very often a man is sent home from the colonies rather for treatment. They are not sure that he is going to be discharged, and the report that we then get is of his state while at the invalid depôt; but they frequently do not know there the cause of the accident.

6015. (*Sir Thomas Phillips.*) Do you supply the imperfection in your own record by adding what is defective?—We gain many particulars by seeing the men in person at Chatham, and record it in every instance. Dr. Maclachlan and myself are very particular upon that point.

6016. (*President.*) Are there any cases in which men are sent up to you for decision as to the pension in which you think that their attendance might fairly be dispensed with?—There were about 500 men in 1855, and there was nearly the same number in 1856 discharged on the completion of their periods of 21 years' service. Under the regulations the commanding officer must get first the authority of the adjutant-general for discharging a man.

6017. Do not they prefer to come and get discharged for disability, as they get 2*d.* more?—No, they get no more for ordinary disability.

6018. Do they not generally contrive to produce a disability worth 2*d.*?—In many cases there is no disability, and they are discharged because of completing their period of service. I believe the feeling is rather that they would appear, as they term it, before the Commissioners at Chelsea Hospital. As to a great number of those men, when a ship arrives from India, with some 200 invalids, they may have 20 on board of this class, but they cannot stop the ship at Plymouth to put them out, and on they go to the invalid depôt, but all those men who have completed 21 years service in infantry and 24 in cavalry might be discharged without appearing in person.

6019. Whenever limited service men come upon the pension list after having served 21 years, those men would be all entitled, without any question, and without disability?—I am not able to say what particular bargain would be made with them, but I presume so.

6020. I mean that they will have their discharge as a matter of course at the end of 21 years' service?—No; I cannot say what the Government will do, but I presume they will all have their regular rates of pension.

6021. There would be no question as to the discharge with them as now?—No; there is no man now who can claim his discharge; they, I presume, could.

6022. (*Sir Thomas Phillips.*) The men who can claim their discharge at the expiration of 21 years may be discharged simply by the commanding officer?—Not without a dispensing authority from the secretary-at-war.

6023. Is that obtained?—Yes, if the adjutant-general recommends it.

6024. (*President.*) What is the number of in-pensioners at Chelsea?—The establishment is 538, and casualties are filled up quarterly.

6025. Have you many more candidates for admission than you have vacancies?—We have generally about three times the number. We do not seek for candidates, it is quite voluntary on the part of the candidates. They apply through the staff officer of pensioners, who is furnished with forms; this period of the year is generally rather slack.

6026. What are the annual vacancies?—About 60.

6027. What is the number of annual candidates?—Three times that number, there are about 60 casualties that arise from death, and there are men that wish to leave the place.

6028. And the candidates are greatly in excess of the number of admissions?—They are fully upon the average three times the number.

6029. What are the rules with regard to the admission of in-pensioners?—I will hand in this memorandum showing the qualifications.

The same was handed in.

"MEMORANDUM of the Qualifications necessary to be possessed by an Out-pensioner of Chelsea Hospital in order to render himself eligible for Admission as an In-pensioner of that Establishment, and explanatory of the Course pursued on Applications for Admission being received at the Hospital.

"QUALIFICATIONS.

"1st. The board have fixed 55 years as the minimum of age on admission, and 21 years in the infantry, or 24 years in the cavalry, as the minimum period of service, entitling an out-pensioner to admission as an in-pensioner, where the claim is preferred solely on account of age and long service.

"2d. But in the cases of candidates applying on account of the loss of one or more limbs, or severe bodily wounds, or other injuries or disabilities, the result of foreign service, disqualifying them from labour, there is no restriction as to the period of service or age of the applicant, but the board are governed in their selection by the peculiar circumstances of the case.

"3d. In all cases good character, both in and since discharged from the service, are essential requisites,

and in selecting from among the candidates to fill up the vacancies caused by death or otherwise, the board invariably give the preference to those men who have borne the best character and served the longest period abroad.

" *Course pursued on Applications for Admission being received:—*

" On receipt of a personal or written application from an out-pensioner for admission as an in-pensioner, the secretary, as a preliminary step, delivers or forwards to him a printed form to fill up, requiring him to state certain particulars regarding his age, service, &c., &c. (see copy of said form annexed). But the staff officers being supplied with blank forms, a majority of the applications are received directly through them.

" The vacancies caused by death, &c., are filled up quarterly, except in any special case of distress or disability, when, if eligible and there is a vacancy, the candidate is admitted on the first of the following month, provided his out-pension has not been issued to him beyond the last day of the preceding month, which fact is first ascertained from the staff officer of his district by the secretary. On the board day appointed by the commissioners for investigating the claims of the candidates and admitting those selected, the man's application, the staff officer's report, and any other testimonials, together with his discharge documents, deposited in the secretary's office at the time of his admission as an out-pensioner,. are submitted to the board.

" Prior to being received into the house, married men are required to show that their wives and families are provided for, or at least that the parish authorities will prefer no claim on that account in the event of their being admitted.—Royal Hospital, Chelsea."

6030. (*Sir Thomas Phillips.*) Is there any limit as to age?—We do not take a man in on account of service under 55; then he is required to have served all his period. Of course in the case of wounds the wounds are considered, and age is then out of the question; but where it is a question of age and service 55 years is the minimum.

6031. You take them at any age for disability?—Not young men, we do not volunteer to take them, but if a man has his arm or leg off, we cannot very well reject him.

6032. (*Mr. A. S. Stafford.*) Is there any difficulty in letting them go on the out-pension again?—Not the slightest, the board never raise any difficulty at all.

6033. (*Sir H. K. Storks.*) Do the men avail themselves of the privilege of going out again?—They come in to serve themselves, and the number that go out on request are very few; I have a statement here showing that. This number was taken only yesterday or the day before, the vacancies were filled up yesterday, but they are not included in this; the average age of the men now in the house, taken yesterday, was 70 years and 8 months; their average service 15 years; the average rate of pension was $8\frac{1}{2}d.$ when they came in. I will hand this paper in.

The same was delivered in and is as follows:—

RETURN of the average Age, Service, Rate of Pension, &c., of the In-pensioners, Royal Hospital, Chelsea, June 22nd, 1857.

Average age, 70 years $8\frac{1}{2}$ months.
Average service, 14 years $10\frac{1}{3}$ months.
Average rate of pension, $8\frac{1}{2}d.$
Number in possession of medals:—

One medal - -	263	men.
Two medals - -	80	„
Three medals -	1	„
	344	„
Without medals -	172	„
	516	

Medal Clasps.

In possession	of 1	clasp	64	men.
„	2	„	49	„
„	3	„	44	„
„	4	„	27	„
„	5	„	27	„
„	6	„	10	„
„	7	„	21	„
„	8	„	18	„
„	9	„	11	„
„	10	„	24	„
„	11	„	7	„
„	12	„	2	„
„	15	„	1	„

426 medals and 1343 clasps.

Wounds.

Received	1	wound	128	men.
„	2	„	85	„
„	3	„	39	„
„	4	„	8	„
„	5	„	9	„
„	6	„	1	„
„	14	„	1	„
Total wounded	-		271	
Not wounded	-		245	
			516	

Number who have lost a leg each -	10
Number who have lost an arm each -	3
Totally blind - - - -	3
Nearly blind - - - -	10

Rate of out-pension.

		s.	d.			s.	d.
54	men at	0	5	4	men at	1	$1\frac{1}{2}$
164	„	0	6	5	„	1	2
25	„	0	7	5	„	1	$2\frac{1}{2}$
2	„	0	8	5	„	1	3
114	„	0	9	3	„	1	$3\frac{1}{2}$
16	„	0	10	1	„	1	4
1	„	0	11	1	„	1	$4\frac{1}{2}$
2	„	0	$11\frac{1}{2}$	1	„	1	$7\frac{1}{2}$
94	„	1	0				
9	„	1	$0\frac{1}{2}$	516			
10	„	1	1				

6034. (*Sir Thomas Phillips.*) Will you state the number that discharge themselves; is it inconsiderable?—Probably there may be upon the average four or five men in a quarter, not more; and as to the men that are dismissed, if a man disgraces himself we put him out; I should say four or five upon the average in a year.

6035. (*Mr. A. S. Stafford.*) What number are dismissed in a year?—I do not think above three or four on the average for bad conduct, men making themselves disagreeable to their comrades, or for drunkenness.

6036. (*Sir H. K. Storks.*) Have you many defaulters in the hospital?—It is a question that I can hardly answer, that is under the governor entirely.

6037. (*President.*) Is there any other matter that occurs to you on the subject of the pension, or with regard to the papers that are produced, that you can suggest to the Commissioners?—There is a form that is made use of which I will give in if the Commissioners please. It is a form that the candidate fills up, and it generally comes through the staff officer.

A. J. Moorhead, Esq.

24 June 1857.

INFORMATION necessary to be furnished by an Out-pensioner of Chelsea Hospital, who wishes to become a Candidate for Admission on the In-pension.

State your christian and surname, and the regiment from which you were admitted a pensioner, the rate of your pension, and the date of your admission on the pension list - - -

Mention any other regiment in which you have served - -

Have you ever served abroad? if so, state where, and the period of such service - - -

If you have served in any action, state the name of it -

If you have been wounded, state in what part of your body, and in what action you received the said wound - - -

If you have a wife or family, state how they will be provided for in the event of your being admitted an in-pensioner - -

What is your precise address, and in what staff district do you receive your out-pension? - -

Do you belong to the local company?

We hereby certify that the general conduct of
since he lived in this parish, has been
and in the event of his being admitted an in-pensioner, the parish will have no claim upon his pension.

_____ { *Minister and Churchwardens of* } *the Parish of*
_____

I certify that
is not labouring under any degree of mental derangement, nor infected with any contagious disorder.

_____ *Surgeon.*

The above-mentioned has been paid his pension up to , and his character has been ; and I have no reason to believe, either from inquiries made by me, or from any circumstances which have come to my knowledge, that he has exhibited symptoms of insanity or of weakness of intellect, to such an extent as to incapacitate him from taking care of himself.

Dated *Staff Officer of Pensioners,*
District.

N.B.—This form is to be returned to the "*Secretary of Chelsea Hospital,*" as directed on the other side.

6038. I meant as referring to an applicant for an out-pension?—The feeling of our board is that the minimum of the rate for wounds is too high, and the board would better perform their duty if there was nothing fixed between the minimum and the maximum rate, leaving them to fill up what should be given.

6039. Do you keep at Chelsea a record of the deaths of the out-pensioners?—We have a record of them because it is highly necessary, as we have such an immense number of applications, but that lies more now with the War Department; it comes from the staff officer, and we have a duplicate of that return for our own use.

6040. (*Dr. A. Smith.*) Do you think that any disadvantage would result to the government if the men were to be pensioned in the colonies where they are serving at the time?—They are so pensioned; all that request and wish to be; we have a great number of them.

6041. But that principle cannot be generally understood?—It is perfectly understood by the commanding officers.

6042. A long correspondence has been referred to me for the purpose of ascertaining whether I saw any objections to men being discharged from the service with a view to their remaining in New Zealand and Australia?—Authority would be sent out for their discharge, and their discharge documents would be sent to us. Generally speaking they are men of 21 years' service.

6043. But below that service?—We have cases of that kind, but not generally; I do not think from want of its being known.

6044. Would there be any objection to that rule being extended?—I consider not upon good evidence, but we ought to have better and fuller medical reports than we have; those that come from any distance ought to be very full indeed.

6045. In that case, if they were very full, you do not think that the government would be losers by permitting men of those years' service, who were unfit for further service, to be discharged on the spot?—On the contrary they would be gainers, as far as the conveyance home was concerned; and the men would be benefitted if they wished to reside there.

6046. (*Sir Thomas Phillips.*) You require that the evidence shall be clear that they are unfit for service?—Yes, the general commanding appoints some board for the examination now.

6047. (*Dr. A. Smith.*) Are you aware that a number of men who are discharged from Chatham afterwards apply to be re-enlisted?—I possess no means of answering this question.

6048. (*President.*) The only cases, as I understand you, in which you think that the appearance of the men who are now brought to Chatham might be dispensed with, are the cases of those men whose service has expired and who claim pensions for service and not disability?—I do not mean to say that in the cases of some men of short service, having disabilities, such a course might not be carried out, but I doubt whether it would be a satisfactory one.

6049. With regard to a man whose claim to a pension is founded upon injury or disability, do you think it would be impossible to draw a line, and that all had better appear?—I think so; a different opinion has been expressed, but I must confess that I do not see my way very well through it; I think that the men should be brought forward in every possible instance; many things arise that we are not cognizant of before we go to Chatham.

6050. Did not the pension warrant of 1829 enjoin upon commanding officers an accurate statement of the causes of accidents?—Yes, it did.

6051. That was omitted in the warrant of 1848?—Yes; I think that many commanding officers imagine, in consequence, that it is not required.

6052. Have you experienced any disadvantage from that?—There were three cases in one regiment yesterday of men who had been in the Crimea after the war was over, getting injured, and the detail of those injuries, if looked into at the moment, I am satisfied would have been most beneficial to the public interests and the men too.

6053. Have you got with you any account of the cost of the ration of the in-pensioners?—Yes, this (*producing a paper*) shows the ration itself.

The same was delivered in and is as follows:

A. J. Moorhead, Esq.

24 June 1857.

STATEMENT showing the QUANTITY of PROVISIONS supplied daily to the IN-PENSIONERS of Her Majesty's Royal Hospital at Chelsea. 22nd June 1857.

Beef or Mutton.		Soup.	Bread.		Potatoes.	Morning Meal.			Evening Meal.			Butter.	Porter.	Supplied Weekly.			Remarks.
lbs.	oz.	pints.	lbs.	oz.	lbs.	Cocoa.	Sugar.	Milk.	Tea.	Sugar.	Milk.	oz.	pints.	Cheese.	Flour.	Beef Suet.	
–	13	1	1	–	1	$\frac{3}{4}$ oz.	$\frac{3}{4}$ oz.	$\frac{1}{8}$ pint	$\frac{1}{6}$ oz.	$\frac{3}{4}$ oz.	$\frac{1}{8}$ pint	1	1	$\frac{1}{2}$ lb.	$5\frac{1}{2}$ oz.	$1\frac{1}{2}$ oz.	

N.B.—The Establishment is told off into Six Companies, two of which receive roast meat every day, consequently each man receives roast meat every third day; the day the men receive roast meat they also receive one pint of soup. A liberal allowance of oatmeal, potherbs, salt and pepper for the soup, daily; mustard served out every beef day, viz., Sundays, Tuesdays, and Fridays; mutton on Mondays, Wednesdays, Thursdays, and Saturdays. Every Sunday the men receive half a pound of suet pudding.

On the Anniversaries of Her Majesty's birthday, the Restoration of King Charles the Second, and Christmas Day, 18 ounces of the best roasting beef, with one pound of plum pudding, and one and a half pint of porter extra on these occasions, is furnished to each man. The men employed as cooks and in the laundry receive each an additional pint of porter daily.

6054. What is the whole cost of the men, including the establishment, but not the original cost of the building ?—Taking the whole expenses, the governor and all descriptions of officers, deducting therefrom that portion which I consider belongs to the out-pension, I have made a calculation, not taking in the expense of the building or hospital repairs, which came to 2,000*l.*, under our own management, and it is a trifle less than 25*l.* a year each man.

6055. (*Sir Thomas Phillips.*) What part of that would be establishment charges ?—I have not separated it in that way, but the average cost of a man's ration comes to 10*d.* now.

6056. What do you supply to a man besides that 10*d.* ?—We supply him with clothing and a daily rate of pay.

6057. What is the daily rate of pay ?—It is very small; we have a serjeant-major and two quartermaster-serjeants at 2*s.* 6*d.* each per diem.

6058. What do you pay the pensioners themselves ? —The colour-serjeants receive at the rate of 9*d.*; the company sergeants, of whom there are 24, 7*d.* Then there are corporals at 4*d*, drummers, 2*d.*, and the men get 1*d.* Then there are 50 men who get 2*d.* a day and 50 who get $1\frac{1}{2}$*d.* per day, and the clothing is about 4*l.* per annum.

The witness withdrew.

Dr. MACLACHLAN, examined.

Dr. Maclachlan.

6059. (*President.*) What office do you hold at Chelsea ?—I am physician and principal medical officer of the establishment.

6060. Will you describe the duties that you perform at Chatham, with a view to fixing the rate of pension of the discharged soldier ?—The invalids are brought forward at Chatham for my examination. I then see them individually and take notes of their precise condition at the period that they appear before me, taking particular notice of the disability, the degree of disability, and its character, and whether it has been produced by service or by any other cause.

6061. That is the whole question that you have to decide ?—Yes.

6062. You have nothing to do with his fitness for discharge ?—Virtually nothing, but my instructions authorize a veto.

6063. You could remonstrate ?—Yes, according to the instructions I have a veto, but I do not exercise it, because I consider that these men having been found unfit for further service by the regimental surgeon and by the district staff surgeon, and having subsequently undergone a thorough examination at Chatham, and their discharge being recommended by the staff surgeon of the division, and subsequently approved by the principal medical officer, there the warrant is, I think, sufficient.

6064. All that you have to do is to advise the Commissioners as to the money value of the disability which a man has got ?—Precisely so.

6065. How do you do that ? do you judge merely from your observation of the man himself, or do you have any medical reports of him ?—In the list that I take down with me to Chatham there is an extract from the discharge documents giving an account of the disability which a man labours under. Then I examine him to ascertain whether this disability really exists, or whether he has any other, and the amount of it. In my examination, it frequently happens that I get evidence which has been omitted in the discharge documents—evidence which a man gives on his finally being brought forward, which I know is the sort of evidence that will satisfy the commissioners, and I of course take a note of it.

6066. How is this discharge document compiled ? is it taken from the medical registers in the hospitals where he has been ?—I presume so. The regimental surgeon enters in the discharge document a brief history of the disability of the man, and I presume that is taken from the medical registers generally but not always.

6067. Do you often apply for a sight of the medical register with a view to ascertain more fully the man's disability ?—No.

6068. Is the medical register of much use to you ? —None whatever.

6069. It has been stated that one of the reasons for keeping it in a very voluminous and minute form is the advantage which is derived from it when men are invalided ?—I never see this very voluminous and minute register; I am not guided by it.

6070. Then it must be for the officer at Chatham ? For the regimental medical officer.

6071. You know the registers, do you not ?—Yes, well.

6072. Do you think that the manner in which they are drawn up is the best for the purposes intended ? —I think that it is an extremely irksome affair altogether. I think that a number of cases are entered in that register which might be well omitted.

6073. Would you trust to the admission and discharge book for ordinary cases which have no peculi-

Dr. Maclachlan.

24 June 1857.

arity about them ?—I would, and I think that the director-general could, in half an hour, construct an admission and discharge book which would give every satisfaction.

6074. Still it would be necessary to have a register for the purpose of ensuring that the officer took accurate notes of any thing peculiar that came under his observation ?—Assuredly, I think that all cases that are likely to unfit a man for service, or disabilities likely to entitle him to a pension should be faithfully and carefully recorded in that register.

6075. (*Mr. J. R. Martin.*) And all cases that are of a serious nature must be ?—Yes ; or likely to turn out to be of a serious nature.

6076. (*President.*) Then you provide for two objects, one to give a good medical history of the man as applicable subsequently to his discharge ; and the other would be for medical and scientific purposes, as a record of the disease and its treatment ?—Yes ; with the understanding that many cases might be omitted. A man may come into hospital for a day or two in consequence of a slight catarrh, or he comes in from the effects of a boil, and trifling maladies of that description, which are now necessarily entered in the register. A good admission and discharge book would serve all the purposes of these and like cases, and save an infinity of labour. In short, the medical register is an extremely troublesome affair, and recording in it trivial attacks is a mere waste of valuable time.

6077. Are there any other documents of which you would make the same complaint, as to their complicated character or length ?—I am not aware of any so important.

6078. Has it, in your experience, been observed that medical officers are overlaid with returns ?—I think so, decidedly.

6079. And that much might be done to simplify and to save trouble in that particular ?—I conceive that a good deal might be done.

6080. You state that you think the register is very irksome ; is it not very useful ?—It is very useful in certain cases when it is done, but I do not think that it is ever done very satisfactorily, for this reason, that no officer will enter reports day after day of the course that a common boil is taking, or the course that a slight and insignificant cold is taking, though he is obliged, according to the instructions, to give a daily statement of the progress of the most trifling malady.

6081. (*Sir Thomas Phillips.*) By what rule would you define the cases to be recorded with minuteness and particularity, and those to be omitted ?—I would say that all cases of a serious character, and all injuries likely to incapacitate a man for service, ought to be very carefully recorded.

6082. What would you record ?—I would record the whole history of the case, its origin, &c.

6083. And the treatment ?—Yes.

6084. (*Mr. J. R. Martin.*) The rule should be the importance of each case ?—Yes.

6085. (*Dr. A. Smith.*) Then who should judge of the importance of each case ; the young assistant-surgeon ?—The surgeon and also the assistant-surgeon.

6086. Generally the assistant-surgeon is absent with a detachment, and separated from the surgeon ; whom would you leave it to then ?—I would say that an assistant-surgeon who was fit to take medical charge of a detachment ought to be able to judge of the severity of a case such as should be entered in the military register.

6087. Do you think that he would not be very apt to say, to avoid trouble, that it was not a case that required it ?—I think that you might obviate that by laying down a rule that when a man has been under treatment eight or ten days his case should be taken *de novo*, and some brief record given of that case.

6088. (*Mr. J. R. Martin.*) Besides that, he is serving under the surgeon ?—Yes, and responsible to his superiors. Dr. Smith spoke of a medical officer on detachment. I consider that a medical officer who is sufficiently competent to take charge of a detachment of men is surely sufficiently competent to judge whether a case is worth entering or not.

6089. (*Sir Thomas Phillips.*) I understand you to say as to all cases you would record the fact that the man had become sick on a certain day, and had become well on a certain other day ?—A discharge and admission book would be sufficient for that.

6090. Are the Commissioners to understand you to say further that you would make the medical officer responsible for the cases that he would include in a more minute and particular register ?—Yes.

6091. You would leave that to be done at his own option ?—I would leave it to his own judgment.

6092. There you would have the progress of the disease chronicled day by day and the treatment too ?—Yes, exactly. There are many cases where it is not necessary to record the changes more than once in three or four days ; only in very acute cases is a daily report necessary.

6093. (*Dr. J. Sutherland.*) You would give the medical officer discretion ?—Yes ; I would give the medical officer a little more discretion ; and as a check I would take care that no case should be longer than ten days or a fortnight in hospital without a full record of it being entered in the medical register.

6094. (*Sir Thomas Phillips.*) But you might have very serious cases that would not occupy that time ?—I think there are very few that do not run longer than that which do not show themselves at once.

6095. I understood you to say that you would give the medical officer discretion as to what cases shall be recorded with minuteness and particularity ?—Rules should be laid down. For example, when a man receives such an injury as may ultimately disqualify him for service, though very insignificant as relates to the man's probability of recovery, that injury ought to be most minutely recorded, with a view to the future.

6096. (*Mr. J. R. Martin.*) The medical officers are as responsible to their superiors for the manner in which they conduct and carry on their returns as for any other part of their professional conduct ?—Most assuredly.

6097. (*Dr. A. Smith.*) You mentioned boils. You said you thought that they ought not to be entered. A case occurred a few months ago ; Dr. Taylor having written to me from Chatham as to a man who showed a mark on his leg, which he said was from a wound which he received at Sebastopol. There was a doubt about it, and application was made to me to ascertain from the surgeon of the regiment whether it was a wound or not. The surgeon of the regiment had no record, and the consequence was that we were not able to ascertain it. The man persisted in saying the mark on his leg (the people at Chatham considered it was positively the mark of an old boil) was a wound, and that man was discharged under the assumption that it was a boil ; it might have been a wound ?—I meant that your admission and discharge book would at once tell you whether it was a wound or a boil ; I would say a boil on the leg or on the arm.

6098. There might be several other marks on the leg before that one, and in that case how would you know whether it was the boil referred to ?—I should think that any medical officer who falls in with a man wounded in action would, if he had not an opportunity which he is not at all likely to have to keep up his medical register on active service, record minutely in the admission and discharge book such information as would meet the case that you allude to.

6099. (*Mr. J. R. Martin.*) But that case would involve simply a neglect of duty and nothing else ?—Yes.

6100. (*Dr. A. Smith.*) How long were you in the service ?—Thirteen years before my appointment to Chelsea, during 12 of which I was a regimental medical officer.

6101. From your experience would you believe that taking the whole body of medical officers they are conscientious in the discharge of their duties?—They are, but I am quite satisfied, from my experience, that the medical register is not kept agreeably to the instructions issued by the medical department of the army, because the great majority of cases that occur in a regimental hospital are exceedingly unimportant; and that a medical officer should be obliged day after day to give the history of a common boil, for instance, with the whole details of the treatment including diet, is a duty that is never done, though demanded by the regulations.

6102. (*Mr. J. R. Martin.*) You believe that the complicated nature of the register, as it now exists, is a great temptation to an officer to neglect his duty, and you would simply record the admissions and discharges?—I am satisfied that it is so; and I am further satisfied that a great deal of information necessary for the future history of the individual, or for his discharge, such as would be available, as checks, could be obtained from a well-constructed admission and discharge book.

6103. (*Mr. T. Alexander.*) You could make it under different heads, and tabulate it so as to show the course of treatment. "The name, date of admis-"sion, age, disease, discharge," and so on; a short abstract of the treatment and when he was discharged in one line?—As I said before, I think that the director-general might, in the course of half an hour, construct such an admission and discharge book as would in the majority of cases be perfectly satisfactory both to the medical officer and to the public.

6104. And it would be held as a great boon by medical officers?—Yes.

6105. (*Dr. A. Smith.*) Do you think you are right in saying that slight cases are required to be recorded daily?—When I kept a medical register, as a regimental medical officer, there were instructions to record daily, the progress, &c., of each case. A register of the same kind is in use at Chelsea Hospital, but I do not exact or expect this. I am not aware what the instructions are, if any, that may have recently been issued on the subject, but I know that during the 12 years I was with my regiment it was an imperative duty to register every case, however insignificant it might be, to record daily any change, and to specify the treatment, diet, &c.

6106. (*President.*) Will you read the instructions?—"The following directions for keeping the medical register are to be particularly attended to. The christian and surname of each patient, with his rank, regiment, age, disease, and date of admission should be first entered; and next his place of birth, trade, general appearance, and peculiar temperament, with his previous diseases, and their dates and places; if a recruit, it is to be stated whether he has been previously vaccinated or inoculated. Should mercury have been exhibited in large quantities for previous complaints, the diseases for which given, its effects at the time, and its apparent connexion with his present disease, are to be stated. To these should succeed a full detail of the symptoms, from the nature of which the character of the present disease inserted at the heading of the case, is considered to be established. Among the appearances to be noted at this place should be the state of the animal and vital functions in all acute and in several chronic diseases, the countenance and posture of the patient are likewise on many occasions important to be noted, as affording diagnostic marks; the state of the pulse, skin, tongue, stomach, and bowels, seat and degree of local affections, and the probable causes, complete the history of the case on first admission. The prescriptions are to be in Latin and at full length. In the proper column are to be inserted the rate of diet and the extras ordered daily. Each subsequent report should refer to the symptoms of the preceding day, and the action of the remedies prescribed should be specially noticed." Only imagine such information being exacted in the case of a man admitted with a common boil, or in the slight cases I have referred to! The very copying of the directions would take half an hour. These are the instructions that were in force in my time when I was attached to a regiment. I see they are dated 1855.

6107. (*President.*) You have a paper before you which is in use in the Guards. That is the admission and discharge paper; would that meet the object which you think should be attained by a document of that description?—I think it might be better than this. I think it might be more full with very little additional trouble.

6108. (*Mr. J. R. Martin.*) Without rendering it more troublesome or complicated?—Yes. Some time ago, I was going to remark, I took the trouble of examining the admission and discharge book of almost every hospital in London with a view of forming an admission and discharge book for my own infirmary, and I found that no two hospitals agree.

6109. (*Mr. J. R. Martin.*) You took an abstract of the whole that you thought best?—Yes.

6110. (*President.*) Will you have the goodness to send the commissioners a sheet of your admission book?—Yes. But the admission and discharge book at Chelsea would not apply to regiments, inasmuch as it enters minutely into the cause of a man's discharge, the length of service, and his period of admission into the house.

6111. Will you prepare a sheet as you think it might be done in the service?—I will, with pleasure.

6112. Do you agree with the statement made by Mr. Moorhead as to the necessity of sending all cases to Chatham when a man's claim is founded upon disability?—There is no doubt that it possesses an advantage, but I think that in many cases the present system might be dispensed with. I think it is a most extraordinary arrangement, that a man who has undergone amputation of a thigh in the north of Scotland should be sent to Chatham to be examined by the principal medical officer to ascertain whether that man is fit for further service. It also appears to me dilatory, expensive, and unnecessary that men who have completed 21 years' service in the infantry or 24 in the cavalry, and who have been found unfit for service by the regimental surgeon, should be sent up, perhaps, from the very places in the north of Scotland to which they return as their permanent homes.

6113. If it was a soldier who happened to be quartered in Scotland he would be sent to Chatham, and then go back to Scotland?—Yes, if he gave in that as his residence.

6114. How would you draw the line with regard to this, because there are cases of amputation which carry very little disability with them, it might be a finger?—I will explain shortly the proceeding in invaliding a man.

6115. (*Sir H. K. Storks.*) Who constitute the Board at Chelsea?—The parties that usually attend are the paymaster-general, almost invariably. He is the chairman. Then there is the governor of the hospital, General Sir Edward Blakeney, the lieutenant-governor, General Sir Alexander Woodford, and on special occasions, perhaps the adjutant-general, and the quartermaster-general; always three.

6116. (*President.*) What is the process that you were going to explain?—The regimental surgeon, having found a man unfit for service in concurrence with the commanding officer of the corps, reports the case to the general commanding the district; he then, at the half-yearly inspection, sees them along with the principal medical officer of the district, say a staff surgeon; if they concur in the opinion of the regimental surgeon and the commanding officer, the adjutant-general approves, and the man is sent to Chatham for further examination. After being there for some weeks, and the case being decided upon by the principal medical officer, the discharges are sent to Chelsea by the adjutant-general. Then I go down and examine the man as to the points to which I have already alluded, the precise nature of his disability, the extent of it, and the manner in which it

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has been received so far as I can get testimony, and subsequently, the case being decided upon by the Board of Commissioners, the man is discharged from the service.

6117. What is the change that you would make in the regulation ?—I should say that, in the cases I have just referred to, the finding of the principal medical officer on the station would be quite sufficient, with an instruction from the director-general, that in all cases the history of the man should be most faithfully recorded. The instructions that are issued by the director-general, and the injunctions of the Commissioners in the heading of the discharges are very clear, but, I am sorry to say, they are not always followed with that degree of accuracy and care which I consider necessary.

6118. You would not dispense with the attendance at Chatham altogether ?—Not altogether. Only in those cases of palpable disability, where a man is clearly and indisputably unfit for further service—such a case as a man who has undergone an amputation of a thigh, or an arm, or a leg, or the case of a severe compound fracture, and all men who have completed their third period of service.

6119. (*Sir T. Phillips.*) Would not this answer, that upon a description of the cases, an account of them being sent to you, the authorities at Chelsea should notify that certain cases might receive their discharge without being sent to Chatham, and that certain other cases should attend at Chatham and undergo an examination?—I think it would be better that it should go through the director-general, who has a knowledge of his officers, and who would take care that the rules of the service were strictly adhered to, that in all cases a history of the disability was carefully recorded.

6120. Whom would you make responsible for having an examination in A's case, and dispensing with it in B's case.—The principal medical officer at the station.

6121. You would not require him to send an accurate description of the case to some authority here who would say, I am content with that description, discharge A, and send B up to Chatham ; who should do that?—The director-general.

6122. (*President.*) Or his statement might come to you?—I think that it should go through the director-general. That would be quite a new system.

6123. At present do any of those things pass through the director-general's office ?—Some do.

6124. At present the director-general has nothing to do with the invaliding of the troops ?—His officers have, and he receives the reports or returns.

6125. What are the annual deaths among the in-pensioners at Chelsea ?—It is about 12 per cent. Upwards of 60, about 65 is the average number.

6126. Is the sickness very great among them ?—Necessarily, because they never come to Chelsea Hospital till they are suffering from some chronic malady, and until they are broken in health and infirm.

6127. Have you many bed-ridden men ?—About 15 in number now ; we have 60 or 70 cases always in the infirmary ; the worst description of cases are taken into the infirmary.

6128. You have got a new system of ventilation in the old men's wards and water-closets at Chelsea ?—A number of plans have been tried recently. One has been introduced that was recommended by Dr. Arnott ; but I do not think that I should like to say much about it. I conceive that the experiment has not been fully tried.

6129. Do you think that it is favourable so far as it goes ?—Yes ; but I do not think it suited to Chelsea Hospital.

6130. What is it ?—He has introduced what is called the smokeless grate, the peculiarity of which is that the coals are contained in a box at the bottom, and are raised by means of a lever as they are consumed. The fire being lighted at the top, the bitumen and gas escaping from the heated coal underneath, passing upwards through the ignited surface, are burned. Running below the flooring, in a straight line to the nearest point, there is a shaft which communicates with the external air, and supplies the fire by a guarded opening below the fender. Another shaft, a zinc tube, six inches in diameter, extends along the ceiling from one end of the ward to the other, and opens into a box communicating with the chimney. From this shaft there are funnel-shaped tubes, which enter the men's berths and water-closets. A draught is created by the heated chimney. The water-closets are so contrived that in opening the door there is a rush of water into the pan.

6131. (*Mr. J. R. Martin.*) And the consumed air is carried off ?—Yes.

6132. (*Dr. Sutherland.*) What is the effect of that upon the air in the berths and water-closets ?—I do not think it answers ; I think by that means you do away in a great measure with the advantage which an open fire place has ; you supply the fire-place with the air from without instead of its coming into the ward at all, and the men are in fact respiring the very air that is being deteriorated.

6133. Has it the effect or not of keeping the air in those berths and water-closets sweet ?—Yes.

6134. (*Mr. J. R. Martin.*) You are sensible of a change ?—Yes.

6135. (*Sir T. Phillips.*) How can it have that effect if it does not consume the vitiated air ?—It draws out the air, so to speak, but the great thing seems to be that it heats the apartment with very little fuel. I cannot conceive myself that a sufficiency of fresh air is brought in.

6136. It does not produce cold ?—No.

6137. (*Sir J. Clark.*) Do not you find that the air which comes through that tube spreads itself through the room ?—No, it is brought under the grate, and the objection at Chelsea is this, that the old men cannot manage the grate.

6138. Dr. Arnott was obliged to adapt the plan to the peculiarities of the hospital ?—Yes.

6139. Do you find the air sweet in the wards ?—In the ward where the experiment has been tried the air is certainly sweeter ; it has always been one of the sweetest wards in the place. In the infirmary there is no particular system ; there are open windows and fire-places, louvre panes, Arnott ventilators, and permanent openings over the doors.

6140. (*Mr. A. S. Stafford.*) How are you appointed ?—By the Sovereign, on the nomination of the paymaster-general.

6141. Are there any qualifications necessary ?—You must belong to the army.

6142. Is any period of service necessary ?—Not that I am aware of.

6143. Is there any medical supervision over you ; are you under the director-general ?—In no way. I have the instructions here that were issued to me, in which I am requested to communicate with him in the cases of the invasion of any severe epidemic. There is one instruction here that has become obsolete, that is :—" On a death occurring, after reporting it " to the commissioners, you will send a history of the " case as extracted from the registry book, with the " treatment pursued, to the director-general of hos-" pitals." That is a very old and obsolete practice, which existed in the army many years ago, but it has been discontinued.

6144. What assistants have you ?—I have a staff surgeon of the second class and an assistant staff surgeon.

6145. Have you any dispenser ?—Yes, a dispenser.

6146. Is he a civilian ?—Yes.

6147. (*President.*) How do the second-class staff surgeon and the assistant staff surgeon come to you, are they named by the director-general ?—The assistant surgeon was on application.

6148. Does he remain permanently attached to you ?—No, he comes by roster, and can be removed at any time.

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6149. (*Mr. A. S. Stafford.*) Your dispenser is a civilian ?—Yes.

6150. Is he appointed by you ?—He is appointed by the Commissioners of Chelsea Hospital.

6151. Is he removed by you ?—He is removed by the Commissioners of Chelsea Hospital.

6152. Do you think that the medical attendance is sufficient at Chelsea ?—I think so.

6153. What are your hospital orderlies ?—We have female nurses.

6154. Do you find that answer ?—Admirably.

6155. Have you frequently occasion to change them ?—Very seldom; we have not had occasion to change them of late.

6156. Have you no orderlies at all ?—None.

6157. What pay do you give the nurses ?—The first class has 2*s.* a day, the second class 1*s.* 6*d.*, and the third class 1*s.* 3*d.* a day, with no rations.

6158. With lodging ?—Yes.

6159. And firing ?—Yes.

6160. (*Sir Thomas Phillips.*) And clothing ?—Yes, a suit of clothes.

6161. Does your examination exercise any influence on the question of pension or no pension ?—A material influence.

6162. I thought I collected from you, that you did not reject persons who came up there ?—With reference to that I may observe, that part of my instructions are these, "You are to inspect the invalid "soldiers at Chelsea hospital, Chatham, or Woolwich, "about to be discharged, previously to meetings of the "board held by us, and to report to us in person at "such boards, whether the said soldiers are, in your "opinion, unfit for military service, and the cause of "such unfitness."

6163. Then I misunderstood you when you gave your answer at first, that you had a veto, but did not exercise it over the question of discharge or no discharge ?—I have with the principal medical officer, on one or two occasions, offered an objection, where I thought it a pity that such and such a man should be discharged, and we have in a friendly way agreed that he should be sent back to his corps; that has been done, but the instances are so very rare as to have no practical effect.

6164. With regard to whether a pension is to be given, and the scale of it, your judgment is followed ?—As the medical adviser of the Chelsea Board, I explain to the Commissioners the nature of the disabilities. It rests with them to adopt or reject my view, and to award the pension.

6165. Are the limits as to the amount regulated by a positive rule of any kind ?—They are regulated by Royal Warrant.

The witness withdrew.

Colonel Sir A. M. Tulloch, K.C.B., examined.

Colonel Sir A. M. Tulloch, K.C.B

6166. (*President.*) Do you hold the opinion that men are now granted temporary pensions and discharged from the service, who might be retained in the ranks ?—I do not think that at the time they are discharged they might be retained, for then they are generally in a very unfit state; but they often recover, and become as fit for the ranks as ever. I see many such men in the course of my inspection of pensioners.

6167. You refer to men who are granted pensions for a short period, and at the end of that time are fit to return to the ranks ?—Yes.

6168. Are the numbers sufficiently large to make it worth while to take the matter into consideration ?—I do not think it necessary to make any different law, but if you took them back again you might gain good soldiers.

6169. Cannot you do it now ?—A man must give up his pension if he succeeds in re-enlisting; besides, when the doctor came to examine him, and found that he had been in the service before, he would not take him back.

6170. What step would be necessary in order to bring such men back into the service ?—That there should be no obstacle if found fit by the surgeon. There is a numerous class from the East Indies, for instance, men with bad livers and dysentery, who, recovering in a short time, become fit for service, and being still young, might be re-enlisted with advantage.

6171. At present a man must serve 21 years, which generally produces some disability, to get his discharge?—Yes, that is the practice.

6172. A few are given modified pensions ?—Yes, but they lose 2*d.* a day; they get 10*d.* instead of 1*s.*

6173. All that will be cleared away when the short service warrant comes into full operation ?—Yes, in 11 years hence it will be entirely cleared away.

6174. Have you paid a great deal of attention to the subject of the ration ?—Yes, I have.

6175. You recommended, did you not, in the Crimean report, a fixed rate of stoppage with a fixed ration ?—Most decidedly. Experience in the Crimea showed that it was absolutely necessary that men in the field should be entirely supported in order to be certain of having everything they required.

6176. The system of a partial supply by the commissariat, and a partial supply by the men, entirely failed in the field ?—Yes.

6177. You proposed a ration ?—Yes, similar to that which was then issued in the Crimea, with the substitution of suet pudding, or with raisins in addition for a portion of pork, or of bread; either would have pretty nearly the same effect, and it would give greater variety. The cost of the proposed additions would not probably exceed 2½*d.* The ration that a soldier is entitled to, under other circumstances, not in the field, would have been 1 lb. of bread and 1 lb. of meat for 3½*d.*

6178. Did you add to the bread but not to the meat, or to both the bread and meat in the field ?—The meat still remained 1 lb.; it was the bread that was raised to 1½ lb.

6179. Why did you not add to the meat ?—Because we conceived 1 lb. of meat as much as is necessary.

6180. A pound of foreign meat ?—Yes.

6181. That is only equivalent to about ¾ lb. of English meat ?—Yes; but I conceive that that is quite as much as this class of men has ever been accustomed to have even at hard labour in this country, and it is as much or more than the soldier will have when he leaves the army. I think it a serious matter to accustom him to a very expensive description of food. I should like to see him have more flour in the shape of bread or pudding; but I question the expediency of giving meat.

6182. You submitted that ration afterwards to Dr. Christison, did you not ?—It was submitted to him by Sir John M'Neill, and he thought it a good and sufficient ration.

6183. He considered it to be sufficiently balanced between the two kinds of nutriment essential to keep a man in health ?—Yes.

6184. (*Mr. J. R. Martin.*) Though the men were subjected to the hard labour of the camp ?—Yes; he conceived it a fair diet.

6185. (*President.*) Do you think it would be an advantage to pursue the same system in peace, and give a man a whole ration, and make one stoppage, thereby getting rid of all the complicated accounts for stoppages ?—I should be very glad to see this done in time of peace, if it did not add to expense in

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the issue, or make a larger commissariat establishment necessary.

6186. It was stated by Mr. Adams that this could be done for an increase of expense hardly worth considering?—I know that there is very great difficulty sometimes in the colonies in rationing 100 or 200 men at remote stations, and the result is that you sometimes pay as much for the commissariat establishment as a fourth part of the value of the ration.

6187. Would not the person who contracted with the commissariat do the same as he does now when he contracts with a detachment?—The commissariat officer might not always be able to get a person to contract with him.

6188. If a regiment could get supplied, the commissariat could get supplied?—Yes, there would be very nearly the same difficulties, but though there might not be a person on the spot disposed to undertake the supply of a regiment or of the troops altogether, these might, by going to different shops, be able to get a supply for themselves.

6189. The worst thing that could happen would be that you would have the same difficulties as now?—Yes.

6190. Of what do you propose that the ration should consist?—"Soft bread, 24 oz.; fresh vegeta-
"bles, 8 oz.; rice or barley, 2 oz.; fresh meat, 16 oz.;
"coffee (roasted and ground), 1 oz.; sugar, 2 oz.; spirits,
"$\frac{1}{8}$ of a pint daily; with mustard, $\frac{1}{2}$ oz.; pepper, $\frac{1}{4}$ oz.;
"salt, $\frac{1}{2}$ oz. weekly." The spirits was a ration peculiar to the field, it would not be issued anywhere else.

6191. Would you add anything more, such as pudding?—6 or 8 oz. might be given in the shape of pudding instead of bread.

6192. I think the men here consume $1\frac{1}{2}$ lbs. of bread?—The reason they have the $\frac{1}{2}$ lb. extra is that they consume much bread with their dinner. If they had plain pudding it would be a variety, and they would not require this bread.

6193. Could you apply the same stoppage on board ship?—Yes; I think it could be applied very well.

6194. And in hospital?—Yes; but it might be a question whether you should not take a little more from a man, say 4*d.* every day that he is in hospital.

6195. In war a soldier would lose in hospital, as at present he has no stoppage except the commissariat stoppage in hospital?—I think it is better that he should be subject to a good stoppage in hospital, for I am afraid that the balance that comes to him is not always, either in the field or elsewhere, expended in the way best suited to his health.

6196. At the time when the arrangement was made, that the soldier should only pay for his commissariat ration when in hospital, he was not supplied with many things which are now granted to him there?—I understand that you are going to supply him with clothing and washing and everything of that kind.

6197. Under the new regulation his necessaries will not be subject to any wear and tear?—Yes, and that will save him on the average 2*d.* a day.

6198. (*Sir H. K. Storks.*) He has no right to complain?—No.

6199. (*President.*) What account keeping would be saved by doing away with the stoppage, and giving a man a net pay?—There would be no accounts of any consequence.

6200. Is the stoppage account a complicated one?—Yes, at present it is.

6201. You have stated that it is a very operose and difficult matter?—Exceedingly so; the gentlemen in every department to whom I have spoken declare that it is almost impossible in war, and especially when situated as in the Crimea, to make up the accounts.

6202. Then, again, in the examination of the accounts, of course all those stoppages must be checked and gone over again?—Yes.

6203. (*Mr. J. R. Martin.*) Do you, at the same time, believe that a just audit is next to impossible? Yes, the difficulty was declared to be so great as to render it almost impossible to audit the accounts.

6204. Should not soft bread be issued to the men whenever it is possible to attain so desirable an object?—I conceive that to be of the very utmost importance.

6205. That should be the rule, in fact, and biscuit the exception?—Certainly.

6206. Wherever it was possible to supply it?—Yes. Even on board emigrant ships arrangements are made to issue soft bread; in fact, wherever you have a body of men upon a diet which might perhaps under other circumstances produce scurvy, endeavours are usually made to give them soft bread.

6207. Would it not be desirable, in peace, that so many men per company should be taught the art of baking?—I think that would be one of the greatest improvements—always keeping in view that when you are in the field you must not reckon upon those men to go into the trenches, or as combatants.

6208. Not all of them?—No; it would also be of the greatest benefit to the men to teach them baking, because when you discharged them they could find employment immediately as bakers.

6209. (*President.*) You ought therefore to have a baking establishment at home?—I think so, and also abroad.

6210. (*Mr. J. R. Martin.*) Would it not be very desirable that a couple of men per company should be instructed in well-digging?—That would be an improvement, there is no doubt, wherever water is likely to be required, or wherever you wanted to know something of the sub-soil.

6211. At present for such a desirable object you would have to go out of the regiment for artificers?—I think that some of the soldiers could dig down sufficiently; I am not aware how far they might require to go; but unless they had to go down below 24 or 25 feet, it might be done by them.

6212. Such instruction would not involve much trouble or expense?—No.

6213. (*Sir Thomas Phillips.*) Do you think that in certain climates the diet should be at all varied?—I think it is of the greatest importance that the soldier's diet should be varied as much as practicable. I am sorry to say that it is not so, with the exception of the East Indies, where there is a very considerable variety, because provisions are cheap, and the soldiers have the means of employing servants to cook for them; a soldier in India certainly enjoys very great advantages in this respect.

6214. The adaptation of food to climate is very conducive to health?—Yes, there is no question of it.

6215. (*Mr. J. R. Martin.*) The European soldier is more comfortably circumstanced in India than in any country with which you are acquainted?—Yes, as to diet; but it is owing not to any larger pay, but because the necessaries of life are so reasonable, and wages so low.

6216. (*President.*) In laying down any general ration, there should not only be an occasional change of the article consumed, but also in the manner of preparing it?—Yes.

6217. And then again, equivalent rations in point of value should be given in different climates according to the productions of the country?—Yes, so far as practicable, but a great deal must be left to the general officer commanding.

6218. (*Sir H. K. Storks.*) The general officer might form a board, including a commissariat officer and a medical officer, to decide what the ration should be?—Yes, and what the equivalents.

6219. (*Mr. J. R. Martin.*) Or else a diet suited to the various climates might be included in a manual of sanitary science, such as every medical officer ought to have in his possession?—Yes; after you have fixed it and found it to be the best.

6220. (*President.*) I believe you have drawn out a model dietary?—I have prepared one calculated to

afford greater variety than at present, and which might be applied for so many days in succession. You are aware that a soldier has only the same description of diet from the day he enters the service till he leaves it. That diet consists of good materials; but I am sorry to say they are always cooked in the same way, there is no change whatever. My object is to show how the different items might be so arranged as to give greater variety without any additional expense.

On the first day I would give the soldier an Irish stew, with onions and potatoes and rice pudding; there is no difficulty in that.

6221. Irish stew is what they have now, is it not?—Not exactly; it is something between a stew and a boil.

6222. (*Sir H. K. Storks.*) How would they make the rice pudding?—With a little milk, sugar, rice, and eggs; if you cannot get eggs you may put a small portion of preserved potato to lighten the pudding.

6223. Would the commissariat supply those articles?—They would supply the rice, sugar, and preserved potatoes or eggs; but I see some difficulties as to small items which the commissariat could not supply, these the men might purchase for themselves.

6224. (*President.*) That does not apply to flour, which the commissariat could supply?—No.

On the second day I would suggest boiled salt or cured pork, with pease-soup and potatoes mashed with greens or cabbage; called colcannon in Ireland. I think it would be an advantage to the soldier to have salt provisions one day in the week; he would thus get accustomed to the use of it on service, and learn how to soak and prepare it.

6225. (*Sir H. K. Storks.*) That is to say, the cooks would?—Yes. The third day I would give roast or baked meat, with potatoes and Yorkshire pudding,—the Yorkshire pudding being exactly of the description prepared for the boys at Chelsea asylum.

6226. Where would they get the eggs and milk from?—The pudding used at Chelsea is very good without eggs; and, as I said before, the milk they could get anywhere. I am supposing them to be in garrison or at home.

6227. Is the commissariat to supply it, or is the soldier to supply it himself?—I speak with reference to the ration found by the commissariat,—the milk and eggs I think the soldier might supply himself.

6228. Where are you to get the money for that?—If you go into the expense of this diet you will find that it does not exceed 8½*d.* a day including washing. (*See Appendix No.* XXXI.)

6229. How will you arrange with the commissariat about paying for it?—Provided the cost of this diet does not exceed 8*d.*, with ½*d.* for washing, you are entitled by the regulations to mess a man up to that amount. If the commissariat supplied the major part or $\frac{9}{10}$ths of it, a halfpenny might be applied by the soldier in getting such things as milk, which the commissariat might have a difficulty in issuing; a soldier must have milk in his tea.

6230. But then you come back to the soldier supplying part of his things?—Yes, when not in the field. On the fourth day I would give boiled beef, with soup and vegetables thickened with rice, pearl barley, or sago, also boiled potatoes. Then on the fifth day I would give roast or baked beef, with potatoes under, and plum pudding of the same description as sailors have. On the sixth day I would give boiled mutton with soup and vegetables, and boiled potatoes; it is merely a change from beef to mutton. Then on the seventh day I would give stewed beef with vegetables and potatoes, I think these are all changes which might be quite practicable. (*See Appendix No.* XXX.)

6231. The only difficulty that I see is in the two cases where the eggs and milk are to be supplied?—You cannot supply milk; there must be always some things to purchase. I question whether you can supply fresh vegetables, but you have the resource of the preserved vegetables and the preserved potato, which are valuable alternatives.

6232. But preserved vegetables and the preserved potato are not equal to fresh?—I am not aware that there is much difference; I have used them repeatedly.

6233. A commissariat officer who has been examined stated that he saw no difficulty with regard to vegetables?—In the only case in which they tried to supply them in the Crimea, there was great loss.

6234. But that was under very peculiar circumstances, it was not their habitual duty; but if you made it their duty it would become very much easier?—I know that it would be very difficult to get good potatoes just now.

6235. (*Mr. J. R. Martin.*) If it became once the rule would it not become the business habit of the commissariat department, as it was in India?—I hope it would, but in India they do not supply vegetables.

6236. (*Sir Thomas Phillips.*) What you have suggested is intended to apply to home and to garrisons?—Merely to home and to garrisons, but there are many garrisons where they might have even something better.

6237. Do you contemplate the food being issued to the soldiers cooked?—Yes; there are two ways in which it might be issued; either let the soldier cut off whatever he requires, or if his discretion could not be trusted sufficiently for that, let the meat, after being cooked, be divided as equally as possible under the supervision of a non-commissioned officer.

6238. You contemplate the ration being delivered to the soldier in a state fit to be eaten?—Yes.

6239. (*President.*) When you speak of baked or roast meat, you do not mean that the rations should be cut up raw, but that there should be a joint from which the soldier might cut his dinner?—Yes, or that it should be cut for him. I see no impracticability, under proper arrangements, in a soldier sitting down to joints, as the serjeants do.

6240. (*Sir H. K. Storks.*) If all the six companies are to dine on roast beef, there are some portions of the animal which are served out, and which are not roastable?—To meet this objection I propose that the companies should begin on different days; one company starting with one description, and another with another description of diet, so that you would not have them all boiling and roasting on the same day. If to this you were disposed to add an eighth variety so as to correspond with the eight companies in a battalion, there might be soup made of the head, shanks, and feet of animals, not otherwise issuable; also roast heart, fried liver, and tripe, which are not at present made available, with suet or plum pudding. I am sorry to find, that on service all these parts, constituting about one-fifth of the animal, are lost.

6241. (*Sir Thomas Phillips.*) With regard to spirits, in your first statement you said that you would only issue them in the field?—Yes, or when they were necessary. Officers commanding have power now to issue spirits when they are wanted.

6242. Do you include beer in the ration?—No.

6243. Do you propose that the soldier should be supplied with beer?—I am much disposed to say that he should have his beer, for I have often found that he spends the money intended for beer on whiskey, but this arrangement involves the objection of forcing a saving man to expend money in beer.

6244. Do you not think it necessary for the health of the soldier that he should be supplied with beer?—I think he will be much better with it.

6245. As far as the public service is concerned, it would be desirable that the ration should include beer?—There are objections to it, for instance, beer is sometimes difficult to keep.

6246. (*Sir H. K. Storks.*) And difficult to carry?—Yes, I think however, that one of the great faults we commit is the laying down such an inexorable rule, that wherever there is a difficulty in one instance it is supposed to exist in another; take for instance Gibraltar, why should not the men have beer there? it is a seaport, and it could be carried easily; but if you proposed to issue beer in the eastern

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provinces of the Cape of Good Hope, it would be a very difficult matter.

6247. (*Mr. J. R. Martin.*) In India you are aware that beer is issued to the men?—Yes; but it is not a commissariat issue—not as a ration.

6248. (*Sir Thomas Phillips.*) I understand you to lay down as a rule of a very important character that everything necessary for the health of the soldier should be supplied to him by the government?—Yes, in the field, I certainly think so.

6249. Why not at home?—The only objection is, that I am afraid it might involve considerable expense, and an additional commissariat establishment, where the soldier could just as easily purchase for himself; if that is not so, I see no reason against it.

6250. Suppose you had the means of determining, by what mode the health of soldiers could best be preserved, would you supply them with everything necessary for that purpose?—Yes.

6251. As part of that supply, do you regard beer as necessary?—Yes, in this country I think it is.

6252. And in climates where beer could be provided?—Yes; but at the same time there is a difficulty as to making a soldier drink beer who would probably prefer saving money for his family. I know also that many commanding officers do not like to see beer going about the barracks; if they go in and find half a dozen tankards, the men would allege as an excuse, that it was the ration beer.

6253. (*Sir H. K. Storks.*) Would you supply the soldier gratuitously with beer?—No, I would charge him a penny for it. I would not lay it down as a positive rule, that every man should be obliged to take and pay for it; but certainly, if a man gets a penny a day to be spent in beer, it is better spent in beer than in spirits.

6254. (*President.*) Do you think that you could make an alteration in the ration so as to exclude articles which cannot be supplied generally by the commissariat?—No; if that was the case I should require to exclude the puddings and the milk for tea, and the milk for coffee also; I propose to keep up the breakfast and supper meal as at present.

6255. (*Dr. A. Smith.*) Why should there be a difficulty in supplying milk and eggs by the commissariat; we have no difficulty in supplying them to the regimental hospitals, which would be about the quantity required for a regiment?—Yes; but a regiment would be ten times the number, and there might be ten times the difficulty.

6256. There are certain stations where regiments are quartered, where, if generally known to be wanted, there would be a regular supply of milk and eggs; persons would volunteer to supply them?—Yes, perhaps so, but I think you might easily leave the milk and eggs to be purchased by the men or their non-commissioned officers.

6257. Milk would not be very difficult to supply by the commissariat, would it?—In warm weather it is very apt to turn, and a person who took a contract would require to keep a great quantity in hand.

6258. But the number of men to be supplied would be always the same?—One company might get it from one person, and another company from another; but very many of these difficulties which I have mentioned will vanish when the thing is tried fairly, or you would find out what is likely to do better.

6259. (*President.*) There is no difficulty in supplying a hospital where the patients vary every day with milk?—There is not.

6260. (*Mr. T. Alexander.*) Do you approve of the spirit ration on board ship?—I think in some cases the spirit ration, provided it is well watered and mixed with a quantity of sugar and lime juice, is a very good thing, and for this reason, that the water is very often undrinkable, and sometimes unhealthy.

6261. But the quantity that he takes with his liquor does not supply a man with the amount of water that he drinks every day?—No, but it assists him; three waters would give him half a pint; which is about as much as a man drinks in a day.

6262. Might not the young soldiers be apt to acquire a taste for liquor?—It would be a very bad practice if they got it raw, as I have seen them drink it frequently.

6263. Would not beer be better?—Yes, in point of health.

6264. (*Mr. J. R. Martin.*) Do you not think, with regard to young soldiers, that when once they arrive in a hot climate, during the first 6 months the spirit ration should be withheld from them, and beer substituted?—Yes; the objection I have to rum is, the issuing of it raw; but if made up into weak punch it is very good indeed; the rum is generally of excellent quality on shipboard.

6265. (*Mr. T. Alexander.*) The rule is to issue it on board ship?—Yes.

6266. (*Sir James Clark.*) Is there any difficulty in mixing it in the army?—I do not see that there would be any difficulty, only sometimes they can get beer or wine, which are preferable.

6267. Does beer often get spoiled in hot climates?—Yes; but if it were made strong it would not. I do not think that much of the beer sent out to the East Indies spoils.

6268. It has been reported that the preserved vegetables have not been so effectual in preventing scurvy as vegetables in a natural state?—I have no information on that subject. It is specially laid down by the persons who sell these vegetables that they are antiscorbutic, and possessed of all the qualities of raw vegetables; if that be not the case all contracts for them would be void.

6269. Are you of opinion that a great deal of the animals slaughtered is lost to the army?—Yes, and at a time when probably fresh meat would be very valuable.

6270. (*President.*) At Balaklava did not the sailors buy the heads of the animals and make soup of them?—Yes.

6271. And the French?—Yes, and they made very good soup. In one of our regiments, where there was a Frenchman, he got all the feet of the animals and made excellent jelly, and also cow heel, and dishes of that kind, which he sold at great advantage to himself.

6272. Have you any means of knowing whether meat can be corned or slightly salted so as to last for four months or six and be perfectly safe for the use of an army, being sufficiently preserved, and yet much less deleterious to them than the present navy meat, which is salted for distant stations?—I am doubtful whether you could salt it for four months without a complete change; I think you might do it for a month.

6273. But a month would be a great risk, would it not?—It must be consumed immediately. When the troops were in the Crimea slaughtered fresh meat was sent without being salted at all.

6274. Did it arrive in a state fit to eat?—Yes, and it was issued; but if it had had a little salt rubbed into it, it might have been kept for two or three weeks.

6275. In the way in which meat is prepared for the Australian emigrant ships?—That method might be adopted, but I doubt whether it would last for four months.

6276. (*Mr. T. Alexander.*) Have you seen the meat in the tin cases?—Yes, and have used it very extensively from the first.

6277. (*President.*) Would it be safe to obtain preserved meats of that kind from contractors, or should the government manufacture for themselves?—I think it would be much better for some one on the part of government to see it manufactured. There would be no difficulty in doing this; for when the system of issuing preserved meat was first brought into operation, Earl Grey was in office, and as he was very much interested in bringing about a reduction in the issue of salt meat in the West Indies, I at his request attended for three or four weeks at the place where

the meat was being cured, to see 30,000lbs. or 40,000 lbs. prepared before being sent out. I saw that it was of good quality.

6278. Since that period, which was about the year 1836, a very great change has been made in the diet of the soldiers in the colonies ?—Yes.

6279. On how many days a week was salt meat issued there ?—Five days in a week at most stations in the West Indies.

6280. What has it been diminished to now ?—To two days.

6281. You have been engaged for a very long time with Dr. Balfour in compiling statistics of the army ? —Yes.

6282. What has been the degreee of mortality among British soldiers within the United Kingdom, and in all our foreign possessions ?—There are two periods that I may notice in illustration of this question, one is contained in the four volumes which we presented to Parliament, showing the results from 1817 to 1837 ; the other after 1837, when many important changes were made in the condition of the troops.

6283. That is, changes as to diet, and also the removal of the barracks to higher regions in hot climates ?—Yes, and there has been also some improvement as to the space allowed in the barracks. I have made out a rough statement of the mortality for the 16 years succeeding to 1837.

6284. What is the rough result ?—From 1817 to 1838 the mortality in the West Indies was 78½ per 1000 by diseases treated in hospital. Many men also died by diseases which did not come under treatment, raising the loss very nearly to 85 per 1,000, whereas the mortality, taking the period from 1838 to 1853, has been 60 per 1,000, that is to say, a reduction of very nearly 25 per 1,000 or 2½ per cent. has taken place. In Jamaica where there have been important changes, especially by the troops being removed to the high grounds, the mortality by disease alone, taken upon an average of 20 years, was formerly 121 per 1,000, and including diseases which terminated fatally out of hospital, it was 130 per 1,000, but in the last 17 years which I have gone over, the mortality has been reduced to 58 per 1,000.

6285. (*President.*) Within those 17 years, has the difference been very marked in favour of the last years ?—It is considerably in favour of the last years, but it has varied in this respect.

6286. Will your return show that annually ?—Yes ; when it is completed and published for Parliament. I now pass to Ceylon. In that colony there has been very little alteration of diet, for, as in the East Indies, the men are generally well dieted, owing to the cheapness of provisions ; there has been, however, considerable improvement, by placing the troops in more healthy localities, and the result is that the mortality which on a period of 20 years from 1817 to 1838, was nearly 70 per 1,000, by disease alone ; has from 1838 to 1856 been reduced to 36 per 1,000, or very nearly one-half.

6287. (*Sir H. K. Storks.*) Does that return include the white troops ?—It is the white troops only who are referred to ; they are separated from the black.

6288. Then the Ceylon rifles are not included ?—No ; but the mortality in the West India regiments shows that improvement has extended to the black troops as well as to the white. Taking an average of 20 years, the mortality of the black troops in the West Indies was 40 per 1,000 or 4 per cent., but taken upon the last 17 years, it is 30 per 1,000, though there has been no change by removing them to higher grounds.

6289. (*Sir Thomas Phillips.*) What has been the improvement in their case ?—From 40 to 30, they are not so crowded as they were before.

6290. These are simply the deaths in hospital ?—Yes, merely the deaths in hospital.

6291. (*Sir H. K. Storks.*) Has the improvement resulted from improved diet ?—Yes ; and they have also much more space than they had before in the barracks.

6292. Are the stations also improved for the black troops ?—Yes ; some very unhealthy stations have been improved.

6293. Some of the bad stations have been given up, such as Fort Augusta, and Montego Bay ?—These have been given up for white troops, and also some of the worst stations for black troops.

6294. (*Sir Thomas Phillips.*) Do you know whether the general health of the island of Jamaica is improved ?—In Jamaica the black troops, on the average of the 20 years antecedent to 1837, lost about 30 per thousand annually ; this loss has been reduced to 27 per thousand since 1837.

6295. You cannot tell whether, with regard to European or black population, the general health of the island is improved ?—Decidedly it has not, as to the blacks, for I know that the negro population has fallen off nearly one-third within the last 40 years.

6296. (*Sir H. K. Storks.*) But that has been more on account of emancipation, has it not, than any other cause ; take the island of Mauritius, the black race have nearly disappeared ?—And for a very good reason. If our black soldiers die at the rate of from 40 to 30 per 1,000, at the very best period of life, it is quite clear that no population can last at that rate. In the United Kingdom the population is kept up very well, because the prime only die at the rate of, perhaps, 11 or 12 per 1,000.

6297. But the mortality among the negro population in the slave islands where they have been emancipated arises from their idle and dissolute habits, there being no control over them ; when they were slaves they could not get drunk ?—Yes, partly ; but it must also be kept in mind that the West Indies is not the climate nature intended for them, and the mortality will go on till, in fact, that race becomes extinct there.

6298. (*Mr. J. R. Martin.*) At that rate of mortality it is impossible the people can increase ?—It is quite impossible ; no such thing can be ; where you find the prime of the population between 20 and 40 years of age, losing 30 or 40 per 1,000 annually, the population must decrease. To go on with my comparison. In the Mauritius, taking an average from 1817 to 1838, the loss was 27 per 1,000 of white troops, but upon an average of the last 17 years it has been only 23 per 1,000. The reduction is equally perceptible in most of the colonies, take Saint Helena for example; there the mortality, for a period of about 8 years, during the time of Napoleon's residence, when the men were fed almost exclusively on salt meat, was $25\frac{4}{10}$ per 1,000, but within the last 17 years it has only been 11 per 1,000. In the former period there was over-crowding, but the men occupy the same barracks now as then.

6299. (*Sir Thomas Phillips.*) So far as you can judge you regard, as the causes of the improvement, the altered diet, and the absence of over-crowding ?—Improved diet, and absence of over-crowding, and the removal of the troops to the high grounds, and in the West Indies the shorter period of service, those are four important changes that have taken place.

6300. (*Mr. J. R. Martin.*) Have you during many years been in the habit of investigating the causes of sickness and mortality amongst soldiers within the United Kingdom, and in our foreign possessions ?—Yes, I have.

6301. Have you, during those years, been much occupied in investigating matters relating to the health and comfort of the British soldier ?—Yes ; it has been my duty to bring under the notice of the secretary-at-war anything likely to improve them.

6302. During that period, what has been the range of your observation as to the number of men ?—My range of observation has extended over 100,000 men, I should say for 40 years, making four millions of observations.

6303. No other person in this country except Dr. Farr, of the registrar-general's office, has enjoyed the advantage of so great a range of observations ?—I believe not.

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6304. Does it accord with your observations, that everywhere, and more particularly in tropical climates, we must regard the want of healthy localities for camp stations and cantonments, the absence of proper structural arrangements in barracks and hospitals, the inattention to suitable feeding and clothing, and promoting better habits of life, the absence of instruction in cooking, hutting, exercising, and bathing ; the neglect of change of air and of climate in the remote stages of disease, as the efficient causes of the constant and great losses of the British army ?—No doubt all those causes have, so far as my experience goes, added materially to the mortality.

6305. Have you had an opportunity of considering, in a general way, what might have been the loss in the European forces in India since 1815, when your records on the subject commence ; and if so, will you be good enough to state it ?—I have gone into the matter roughly, by taking the strength in each year, and the deaths, for the last 42 years, and find that the deaths have amounted to nearly 100,000 of Her Majesty's and the East India Company's European forces out there, including officers ; but it is for a very long period.

6306. Is it your belief that the greater part of this loss might have been averted had better sanitary arrangements been practicable, such as keeping the troops at the healthiest, instead of unhealthy stations? —There can be no question, provided all the troops could have been kept at the healthy stations, that much of this loss might have been avoided—but that involves political considerations.—Considering, however, the changes they are now making in India, by which railways will shortly facilitate the movement of troops, it may be a very important question whether a great portion of the men might be kept on the high grounds, where the mortality does not much exceed that of England.

6307. Would not such sanitary measures involve a saving of many millions sterling in money ?—There is no question of it, for every soldier who goes out costs at least 50*l.*

6308. Are you aware that the late Dr. Burke, Inspector-general of hospitals in Bengal, stated that the cost to the State on account of the loss of European soldiers at Secunderabad alone, was the sum of 150,000*l.*, in 30 years ?—I dare say that it was much more, for Secunderabad is one of the stations that was exceedingly unhealthy ; I think that the mortality for several years ran as high as 11 per cent., and in one year 13 per cent., but I believe it is altered now, and that the station is healthy, all those barracks having, after a long discussion, been removed.

6309. Do you think that the evil from this state of things could have held for so long a time, had the medical department of the two armies serving in India been well ordered, well regarded by the State, and consequently well contented with their condition ?— I have no doubt that they made repeated representations, in fact I have seen a great many about the state of those barracks, but there may have been a great political question as to whether the troops could be moved from them or not, I know that the medical officers did make representations, but perhaps they might not have had the weight which they were entitled to.

6310. Looking to the health and history of British soldiers, and to the causes which have everywhere operated to injure their health, what do you expect would be the benefit from having an officer of health to supervise and inspect the sanitary arrangements of the army ?—It would depend upon the power which that officer had, and the position which he held ; of course, if he was very high in office, any recommendation that he made, if he were of repute, would have great weight. There can be no question, that an officer appointed specially to look after the health of the whole army (supposing the head of the medical board too much occupied to take up that subject in a minute way) would be attended with a very good effect. Such a person, however, must obviously be an officer of military as well as medical experience, otherwise he might be led to recommend measures incompatible with discipline and the usages of the service.

6311. If, in peace time, such an officer were to examine and report on the proper sites, and on the sanitary condition of camps, temporary military stations, and cantonments on convalescent stations and sanatoria ; on the structure and arrangement of barracks and hospitals, and on everything affecting the health and comfort of the soldier, would there not be much advantage ?—I think it would be very useful indeed. There is no doubt that it would secure better attention to all those points, than has been given to them, but there are several matters connected with the position of a barrack, which depend upon circumstances. Take Gibraltar, for instance, you cannot alter the fortifications; you make the most of them in building the barracks, but in many cases, the ventilation is difficult to be secured.

6312. There you could simply improve it ?—Yes, Corfu, and Malta, and Halifax, are also places where you would have very little opportunity of improvement, but in the East Indies, Ceylon, and the West Indies a great deal might be done.

6313. In time of war such an officer might be attached to the Quartermaster-general's department, and be always in advance with that officer, so as to be well acquainted with the topography of the scene of action; do you think that his position there would be of advantage to the service ?—Of course it would, provided he could say whether a particular position would be healthy ; there is an impression that too little attention is paid usually to medical experience in selecting sites for camps.

6314. If our Commanders in the East and West Indies had had the advantage of the opinion and the advice of an officer so endowed, do you think that the enormous mortality among the soldiers in those possessions might not have been diminished ?—I think if there had been such an officer in those commands, he would when the war terminated in 1815, have probably brought under the consideration of the government, that it was no longer necessary to keep the troops in these unhealthy positions close to the sea.

6315. In Jamaica where, for so many generations, the mortality of the European soldiers was at the rate of 130 per 1,000 per annum, do you think if such an officer had been there, the troops would have remained so long in the pestilential plains as they were allowed to do ?—I think that if any superior medical officer had specially directed attention to the advantage of moving the men to the high ground, it could easily have been shown that as there was only a loss of 2 per cent. at Maroon Town it would be an advantage to remove men there from the low grounds ; but the state of the slave population at the time may have influenced the question.

6316. If such an officer had been at head quarters in London in 1809, would not some effective warning respecting the climate of Walcheren have been imparted to the government of the day so as to have diminished the evils that occurred there ?—I believe there was some warning given to them, only that they did not attend to it. Napoleon, knowing the sickly nature of the climate, so soon as he heard that the English had gone there, expressed a hope that they would remain.

6317. Had a superior officer of health accompanied the expedition to Rangoon in the first Burmese war, would not some effort have been made to prevent the almost total destruction of European soldiers by scurvy ?—If he had been a man of weight and power ; and could have said to Sir Archibald Campbell, 'You must send round vessels to get fresh provisions and vegetables,' something might have been done.

6318. And also in China?—Fresh provisions could, I believe, have been procured there, and it must have occurred to every one that they should have been used in preference to salt meat in that climate.

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6319. Had such an officer been employed with the forces recently in Bulgaria, would not more care have been observed in selecting better sites for encampments ?—I have not been in Bulgaria, and therefore I could not say whether the troops were in those localities which at first sight would strike a person as unhealthy; but from the experience that an officer of health would acquire, he would be no doubt much more competent to judge what localities should be avoided.

6320. Have you formed any opinion upon the responsibility which ought to attach to the unnecessary sacrifice of health and life by military commanders, and do you not think that some grave responsibility ought to attach to such sacrifices ?—I think it ought, but I am afraid it does not always happen that, when you gain victories or produce great effects, you look to the cost very much.

6321. Are there any circumstances within your recollection apart from the field of actual military operation under which a commander could be warranted in sacrificing the health and the lives of his men?—He might be in an unhealthy position, and it might be absolutely necessary on account of his operations to remain.

6322. Would not that very unhealthiness which might destroy one third of his men, and place the rest of them frequently under treatment in hospital, nullify the post as a military station?—It is entirely a matter of calculation; even Marlborough once sacrificed a very considerable post for the purpose of producing a desired result in his operations.

6323. (*Dr. A. Smith.*) From your experience in the service, and from all the opportunities you have had of ascertaining what medical officers have done by reference to the documents in the director-general's office, do not you consider that almost every officer, particularly of any standing, in the medical department of the army is actually to a very great extent a sanitary officer, and constantly does give attention to those subjects?—In a degree he may be, but I question whether, as yet, our army has made that progress in sanitary arrangements which might have been expected, considering the ample field of observation presented by our colonies.

6324. The medical officers might have made representations continually as to the necessity for improvement in sanitary measures, and the necessity for removing the troops to higher grounds, but those recommendations were in no way attended to ?—With regard to the improvement of barracks and hospitals, I know that many were not attended to. As to the removal to higher grounds, I do not think that so much attention was paid to that subject in the medical reports as there might have been, otherwise this change would have been carried into effect.

6325. From Jamaica there were numerous reports sent to the government, advising that a higher situation should be selected, if it could be found ?—At what period ?

6326. During the last 20 years ?—It was in 1837, nearly 20 years ago, that the government commenced extra buildings at Maroon Town, and in 1843 at Newcastle.

6327. (*Mr. J. R. Martin.*) Does not the circumstance of this inattention to the medical reports show the necessity of having some other arrangement with a view to these great sanitary matters than the old one ?—With regard to inattention shown to medical reports, I can only speak at this moment specially with regard to barracks and hospitals; I know that their condition was repeatedly represented by the medical officers, and when it became my duty to collect information as to the West Indies, and submit it to Lord Grey in a report, I called his attention to the repeated complaints that had been made, and in some instances I showed him the original reports; he was satisfied that the officers had been repeatedly representing it, but that the Ordnance Department would not incur the expense of erecting new buildings.

6328. In fact the medical officers always performed their duties well, the fault was that their reports were not attended to ?—I presume so; I recollect that their representations were very numerous, but ineffectual, principally in consequence of the expense that would have to be incurred.

6329. Are you aware that the recommendation for the removal of the European troops from the plains to the mountains in Jamaica was made so far back as 1791 by Dr. Robert Jackson ?—I am aware that he called attention to the subject at that time, but he had not the same experience then that we have now of the relative mortality at these places, as compared with the low grounds.

The witness withdrew.

Adjourned to Monday next at One o'clock.

Monday, 29th June 1857.

PRESENT:

The Right Hon. Sidney Herbert, M.P.
Dr. Andrew Smith.
T. Alexander, Esq., C.B.
J. R. Martin, Esq.
Dr. John Sutherland.

President, The Right Honourable SIDNEY HERBERT, M.P.

Mr. Berrington attended before the Commissioners, and produced his newly invented Knapsack.

Colonel Sir A. M. Tulloch, K.C.B., further examined.

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6330. (*President.*) Will you state what was the origin of the formation of the statistics of disease and mortality in the army ?—It arose in this way. I happened to be employed on the Recruiting Service in 1834, when 10,000 men were to be reduced in the army, and it occurred to me that it would be well worth considering, whether it would not be better, as a financial measure, to give every man, after ten years' service, his free discharge, than to reduce the army by gradually allowing the numbers to drop off by casualties. To ascertain this it was necessary to calculate the value of the pensions at different ages, and the prospective chances of soldiers attaining those ages; this again involved an inquiry as to what was the mortality in the army. I found very few indeed who could give me any information on that point, but my endeavours to obtain it made me acquainted with Mr. Henry Marshall, the deputy-inspector of hospitals in Edin-

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burgh, from whom I obtained numerous facts which he had been collecting on the subject. I had also collected privately in the East Indies the loss that had occurred in every regiment. Having ultimately thrown together all the information thus obtained, I made calculations which were submitted to the Horse Guards, as to the advantages of facilitating free discharges under the circumstances above referred to. I also drew up a statement for publication through the United Service Magazine, with which I was then in communication, showing the important purposes to which information regarding the mortality in the army might be applied and I gave a summary of that information so far as I had been able to obtain it. From the Army list, in which the death of every officer is recorded and the place where it occurred, I subsequently made up a statement of the loss among that class, and compared it with the loss among the men, so as to get a tolerably fair average of the effect of each climate upon both. At that time Earl Grey had his attention directed to the loss among the troops in the West Indies, and having learnt my endeavours to procure information on the same subject, he proposed my being employed to draw up, from the records of the Medical Department and the War Office, a report for him in the first instance, and, ultimately, for Parliament. The introduction to that report gives the following explanation of the circumstances in which it originated. "In October 1835 the secretary at war deemed it requisite that an inquiry should be instituted into the extent and causes of the sickness and mortality among the troops in the West Indies, with the view of founding thereon such measures as might appear likely to diminish the great loss of life annually experienced in these colonies. At this period there existed no public document which could at once supply that information for a series of years, and though the number might have been ascertained by a compilation from the War Office returns, that fact, unaccompanied by a detail of the diseases, as well as the extent of sickness which prevailed, would have afforded a very inadequate idea of the magnitude of the evil or the causes by which it was induced. Under these circumstances it became necessary to refer to a very voluminous series of returns and reports, containing an historical record of the medical transactions in the British army since 1816, when first established by Sir James McGrigor, the Director-general; but these documents extended over upwards of 160 folio volumes, and had been accumulating at the army medical board for a period of 20 years. The expediency of framing a digest of these documents, for the advancement of medical science, had frequently been suggested by the Director general, though the reduced establishment of his department did not admit of its being carried into effect. Independent of the materials which have been made available in this report, these documents contain a vast mass of information relative to the treatment and medical history of the diseases incident to the colonies, which must prove of great utility to the medical profession in all questions connected with that interesting topic. It became necessary that the investigation should be committed to persons who were conversant with statistical details, and had been in the habit of condensing the results derivable from masses of figures into a succinct and comprehensive form. For this duty Mr. Henry Marshall, Deputy Inspector-General of hospitals, and myself, were nominated by the Secretary-at-war, on the recommendation of the Director-general. For the honour of this selection we were, I believe, principally indebted to the circumstance of our having been previously engaged in publications showing the extent of mortality among the troops in the colonies, collected from such limited sources of information as were within our reach. The documents submitted for our investigation, and which we were desired to take as the basis of our report, consisted principally of a series of returns furnished annually by every medical officer in charge of troops on foreign stations to the principal medical officer of the colony in which he serves, detailing the number of troops under his charge, with the admissions into hospitals and deaths among them, in the course of the year, and a specification of the diseases by which they were occasioned. The contents of these are then condensed by the principal officer into one general return, embracing the sanitary details of the whole troops in the colony, which is transmitted to the medical department, where it forms a record of the state of their health for that year. These annual returns have generally been accompanied by a report on the causes by which it was supposed the health of the troops had been affected, their diet, duty, and employment, the state of the barrack and hospital accommodation, the topography of the station, the nature of the soil, the climate, the production of the colony, &c. From these sources of information, a report was prepared by Mr. Marshall and myself, showing the sickness, mortality, and prevailing diseases among the troops in the West Indies, from 1817 to 1834. On this report being submitted to the secretary-at-war in May 1836, he directed the investigation to be extended to the returns from each foreign station, forwarded monthly to the War Office, by which the details omitted in the medical returns might be supplied, and the average number constantly sick ascertained. He also directed an inquiry to be made into the influence of age and length of residence on mortality in tropical climates, by means of the returns of age and service which had been established in 1830 for this purpose, and that similar investigations should be carried on with regard to the troops in all the colonies. When an opportunity was thus afforded of rendering the report so complete, the marked difference which had been observed in the course of the investigation, between the salubrity of different stations, though in the immediate vicinity of each other, also suggested the necessity for a more minute inquiry into the nature of the localities where the troops were posted, with the view of ascertaining to what agency that difference might be attributable. This ultimately led to the preparation of the topographical descriptions now prefixed to the details of each station, which were carefully compiled from the medical records, and such other sources of information as were attainable. In the meantime, the returns for 1835 and 1836 were received, which enabled me to complete the results, for a period of twenty years. In carrying on this extended investigation, however, I was deprived of the personal superintendence of Mr. Marshall, who left London in June 1836: but, though the task of extracting and reducing into shape the mass of materials necessary for the completion of these labours has thus devolved upon me, I have constantly had the advantage of his revision, and, on all medical points involved in these details, of his assistance and advice. On the departure of Mr. Marshall, the Director-general kindly permitted me to avail myself of the services of assistant-surgeon Balfour, of the medical staff at Chatham, whose assiduity and intelligence in the collection and arrangement of the materials, has tended much to facilitate the progress of this investigation." I beg to add, that Dr. Balfour was associated with me in the preparation of all the subsequent reports.

6331. Then the great mortality shown on those stations was one of the prime causes of the efforts that were made to improve the state of the troops in the West Indies?—Yes, and it was an argument for all the changes that were subsequently carried out.

6332. Is there any annual return showing the mortality from each individual disease in the army?—Yes; both here and in the medical department. In the return now submitted, every individual disease is entered.

6333. Are there any means of distinguishing febrile affections proceeding from intoxication, sleeping out, and so on?—None; sleeping out and intoxication would both be crimes, and treated accordingly.

6334. Intoxication would go down in your return as fever?—Yes, but only if the effect of it was so great as to cause admission into hospital.

6335. You have not yet adopted that expression which has been imported from Germany, namely, "Alcoholismus"?—No; some medical officers class it under "Observatio."

6336. Do you distinguish between typhus and typhoid diseases?—Typhus, not typhoid.

6337. And continued fever?—Yes; continued fever.

6338. And periodical, remittent, and intermittent?—Yes; quotidian, tertian, and quartan, remittent, yellow fever, and typhus.

6339. Could you put in the forms that you use in making up the sanitary returns?—Yes, (*see App. No.* LXXV.) but the greater portion of the 20 years contained in the first series was made up from medical returns. At that time we had no sanitary returns, but as the former reports contained long discussions about diseases, it was deemed advisable to originate others more especially restricted to statistical facts.

6340. You say that the term used when the nature of a case is obscure and the diagnosis therefore imperfect, is "Observatio"?—Yes.

6341. Is it a general practice to make an immediate diagnosis in the hospital, when a case is brought in?—Yes; I presume so, from the circumstance that so few medical officers use the term "Observatio."

6342. If the diagnosis at first is wrong, one of two things would happen: either the man must be discharged and re-admitted with a view to a fresh nomination of his disease, or else you have got a man entered under one disease who turns out really to be affected by another?—Yes; there is a difficulty in either way; for instance, a certain number of men go into hospital with a slight catarrh, it next becomes chronic, and ultimately ends in consumption. Of course in comparing the admissions and deaths from chronic catarrh, every man discharged in order that he may be re-entered under the head of consumption, would by those who were unacquainted with the practice be reckoned as a recovery, thus giving rise to the conclusion that there were more recoveries from that disease than really took place.

6343. Would it not be an improvement if it were made a rule in hospital that the diagnosis should not be made until three or four days after the admission?—I think it would be an advantage if the word "Observatio" was kept up during the interval.

6344. What do you do in cases where it appears in the report as "Observatio"?—No results can be drawn from them except that a certain number had been in hospital without their diseases being ascertained.

6345. Would not the following return correct that?—There would be still an addition to be made under that head.

6346. In the next return the man's name would be opposite to catarrh instead of under "Observatio"?—We do not get nominal returns in the sanitary reports, we merely get a statement of the diseases. I do not think there would be the smallest objection to using the word "Observatio" to a greater extent than at present, in order to afford security against error; not that I think that any very important errors do arise. The only difficulty would be in the weekly returns; when these were once made up you could not alter them without the risk of error.

6347. Have you any comparison between the mortality among the officers or non-commissioned officers and the men?—Yes; so far as my publications have gone.

6348. Could you give the Commissioners a summary of your statistical inquiries, showing the mortality of the officers and privates at the several ages specified in your reports, distinguishing the cavalry and the infantry?—Yes, I could do so. (*See App. No.* LXI.)

6349. And distinguishing the results in England and Wales, Scotland, and Ireland?—No; but I could give all the foreign stations, and the officers and men respectively.

6350. Can you also give the very bad stations, the coast of Africa, and the West Indies?—Yes, I think I have got all those; I may say generally that the mortality among the officers is considerably less than among the men, and that this was held to be a measure of the extent to which it was possible to reduce the mortality.

6351. From the superior comforts enjoyed by the officers, and the better sanitary precautions which are taken?—Yes; and the diet; keeping always in view that an officer in bad health can sell his commission, which tends to make the rate of mortality among that class appear lower than it really is.

6352. (*Mr. J. R. Martin.*) The better habits of life, on the part of an officer, go far to give him comparative immunity?—Yes.

6353. Can you state the mortality in the army, on each of the stations?—Yes; for 40 years, on each station, and the principal diseases. (*See App. No.* LXII.)

6354. Can you show the mortality among the native troops at the same station?—Yes; the native troops, for example, in the West Indies. (*See App. No.* LXII.)

6355. Can you also give the mortality among the native population?—Yes; I have also got that; I had to investigate that matter very strictly, and it brought out some very curious details as to the negro population, particularly in the West Indies. (*See App. No.* LXIII.)

6356. That would show, whether the mortality among the soldiers exceeds that amongst the civil communities in those stations?—It appears to do so everywhere.

6357. In the same way, can you show the mortality as compared with the civil population at home?—Yes; and at the same ages, very nearly. (*See App. No.* LX.)

6358. The excess of the mortality among the troops, over the civil population, is considerable?—Yes, it is; I can also give the comparative mortality among British troops as compared with other armies. The mortality in the Prussian army, taking it upon an average of nine years, from 1829 to 1838, amounts to 13·1 per 1000.

6359. But they have a very short service?—Yes. In the United States army, in the northern division, from 1829 to 1838 also, the mortality was 18·8 per 1000.

6360. What sort of force is that?—The force is composed, principally, of deserters from our own army, and it is also composed of men rather more advanced in life.

6361. Do you apprehend that their service is confined to the northern states?—No; there are some in the southern states. I think Dr. Balfour published a statement, showing their distribution and mortality at each station, and that the great mass of them are in the northern states. In the French army, from 1842 to 1845, the loss was 19 per 1000.

6362. What was the length of service?—About seven years.

6363. The Prussians, I believe, serve only for three years?—Yes.

6364. Can you give the loss in the Indian army?—The loss in the Bengal native troops, taken for a very long period, from 1825 to 1844, was 17·9 per thousand annually.

6365. Were they sepoy regiments?—Yes, sepoys; the loss in the Madras native troops, was 20·9 per 1000; and in Bombay it was only 12·9 per 1000; but all those results show that the mortality is higher than the average among the population at the same periods of life.

6366. Have you a comparison of the mortality with that among the civil population?—No not in the East Indies, but I assume it is lower than among the military, because I do not think that any nation can

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increase as the population does in the East Indies, which has a mortality as high as 20 per 1,000 among the very best class of the population.

6367. Will you turn to the table which shows a comparison of the mortality among the troops in England with that in the civil population ?—Between 20 and 25 years of age the civil population loses 9·6 per 1,000 ; dragoon guards, and dragoons, 11·8 per 1,000 ; infantry of the line, 17·8 per 1,000.

6368. For a shorter service than that in the French army the mortality is greater ?—No, it is 17·8 against 19 in the French army.

6369. Will you continue the comparison for more advanced ages ?—Between 25 and 30 in the civil population, at the same period of life and in the same towns, the mortality is 10·4 ; while in dragoon guards and dragoons it is 14·3 ; infantry of the line, 19·8. From 30 to 35 the civil population mortality is 11·4 per 1,000 ; dragoon guards and dragoons, 14·6 ; infantry of the line, 19·8. From 35 to 40 the mortality in the civil population is 16·1 ; dragoon guards and dragoons, 15·3 ; infantry of the line, 21. Throughout the whole there is a very considerable preponderance of mortality amongst the military.

6370. You have not got the Foot Guards ?—No ; I have taken the Dragoon guards and dragoons, as it answers better to compare them, with the civil population of the towns in most of which they are quartered.

6371. Have you not a comparison of the mortality in the Foot Guards ?—Yes ; and it runs thus ; from 20 to 25, 21·6 per 1,000 ; from 25 to 30, 21·1 ; from 30 to 35, 19·5 ; from 35 to 40, 22·4 ; but these troops are principally in and about London.

6372. Can you compare them with the London population ?—No ; the London population is a shifting population, and it is difficult to ascertain it.

6373. But the London population would afford you as good a test as to the Guards as the population of Manchester would afford you as to the dragoon guards ?—As to the population of London, I apprehend there is a very great difference indeed according to the parts of London in which they live.

6374. But the Guards are quartered at the Tower, at Portman Barracks, and at Westminster, and those are three very different parts of London, representing very fairly the different degrees of health ?—I suspect that the greater proportion of the lowest classes live in the very worst parts of the town.

6375. Can there be any place much worse than the Tower ?—No, but it has not a very large population, and the Guards are only there for a time.

6376. That would be a comparison very unfavourable to the civil population, therefore it ought to tell in favour of the guards ; still in point of fact, their mortality is very much excess ?—I think so, particularly during the period to which I have referred, as there was a very heavy loss from typhus in the Tower.

6377. In the other calculations you have made, you have taken them against the whole population ?—No, against the population of 24 large towns in most of which troops are generally quartered.

6378. Have you confined the comparison to males of the same age ?—Yes.

6379. But even there the conditions are against the civil population, because it contains paupers, vagrants, and persons occupied in the most unhealthy trades ?—That may be, as it extends over every class, but it comprises some of the very best towns. Those of which I have taken the population between 20 and 50 as the standard of comparison are, Maidstone, Northampton, Cambridge, Exeter, Bath, Bristol, Clifton, Dudley, Wolverhampton, Stoke-upon-Trent, Birmingham, Ashton, Leicester, Nottingham, Derby, Liverpool, West Derby, Manchester, Salford, Sheffield, Hunsfleet, Leeds, Sunderland, Newcastle-upon-Tyne, and Carlisle; in some of those there are only small detachments, but the great mass of the troops are scattered throughout them.

6380. If the unhealthy classes, such as paupers, and those exercising unhealthy trades, were cast out, then, of course, the difference would be still more unfavourable to the army ?—Yes, but by that course you would only take the favourable classes, those who live in large houses having large incomes.

6381. Except that the people that live in large houses and have large incomes are not the longest lived people in the community ?—They ought to be, having always good air to breathe and other advantages.

6382. But they are not so low as the rates of mortality among the agricultural labourers ?—No; but if you took the country gentlemen alone, it would be so.

6383. On the other hand, there is a double process of expurgation of weak men going on in the army ?—Yes.

6384. First of all there are certain removals of weak recruits, then there is the constant invaliding of the weakly and sickly men, so that the remainder are all picked lives?—Yes, they ought to be so considered, they are picked once in 21 years.

6385. (*Mr. J. R. Martin.*) How often has the standard of the British soldier been reduced since 1793?—It is impossible to say how often.

6386 ?—Has it actually been reduced three times ?—I daresay 30 times ; for the standard is reduced and raised again according as we want troops. I suspect that it will be found that the standard of 1793 was very low. I conceive to be a counterbalancing cause to the selection which takes place that you are always so anxious to get tall men, and do not attend enough to the capacity of the chest ; thus slight young men are brought in who are the very class most subject to consumption.

6387. That is the case in the Guards; but with the exception of the grenadier companies, it is not the case in the line?—It is still more the case in the line.

6388. But the tall men are not very tall men in the line, they do not exceed 5 feet 10 inches?—Probably not, but they are always as tall as can be got ; if there were two lads, one 5 feet 6, and the other 5 feet 9, the tallest would be taken.

6389. In those heights is there any difference in the healthiness of the two? they are both under a height which would produce weakness of body, are they not?—I suspect that where there is good capacity of chest the greatest strength of body will be found under 5 feet 6, rather than above it.

6390. (*President.*) Pugilists are generally about 5 feet 6?—Some men possess great capacity of chest, and the healthiest are rather under the medium size, they have greater width in proportion to their height.

6391. Have you any knowledge among your discharged pensioners of the rates of mortality for six months or a year after they have been invalided?—I know what is the mortality among temporary pensioners whose pensions seldom exceed two years and are rarely under six months ; every one of that class may on the average be a year or a year and a half on the pension list. Out of a strength of 12,163, extending over a period of eight years, there died 1,446 or nearly 12 per cent. annually.

6392. At what average age ?—It might be probably about 25, it is generally very low, but then it must be observed that these are almost all consumptive cases or men that had come home from the East Indies in a very bad state of health, suffering from dysentery or liver complaint ; who seem almost always to die off speedily, or to recover.

6393. By the process of invaliding, the army rates of mortality have been improved by getting rid of those cases ?—Yes.

6394. But those really belong to the mortality of the army ?—Yes.

6395. What are the diseases which are so fatal to them ?—Consumption, and pulmonary diseases, dysentery, and liver complaint.

6396. In the Guards the predominant diseases are pulmonary diseases ?—Yes, almost everywhere,

6397. (*Mr. J. R. Martin.*) Within the United Kingdom ?—Yes, this is the class of men who die chiefly.

6398. (*President*) Seeing that you have picked lives at first, and therefore you ought to have the healthiest part of the population, the men being well clothed, and fairly fed, and housed, at any rate at a considerable expense, what should you say were the causes that have produced such great mortality among the soldiers ?—It is a matter which I have very often considered without being able to arrive at any positive result, but I think one of the great evils is, their being massed together in large numbers.

6399. That is another name for want of ventilation ?—Yes, of course.

6400. They do not suffer much from contagious diseases ?—They suffer considerably from fever, but it is difficult to lay down a rule as to what is contagious and what is not ; living together, however, in large barracks, if there be any contagious or epidemic disease, it is likely to spread among them.

6401. Does the army practically suffer much from epidemic diseases ?—Comparatively little.

6402. (*President.*) You do not attribute much of the disease to intemperance ?—I do not think that exists more among them than among the class of the population to which they belong. It has been said that the pensioners are more intemperate ; but if they were so as soldiers, they would be more so as pensioners. Yet, when I go round to inspect them I have always the number present, the number absent, and the causes of their absence ; and I have not found above 3 per cent. absent altogether, 2 per cent. of these are from certified sickness, and very rarely has there been 1 per cent. from drunkenness, which shows, I think, that drunkenness among them cannot be very common; and I think in the army if you examined into the number of men who come under the notice of the commanding officer for drunkenness, you would not find much more than the average in the population from which they came.

6403. There is a good deal of disease resulting from debauchery ?—Yes, a great deal of venereal disease, which is much more common among troops than civilians, because there are comparatively few married men among them. Unless it be from the troops living altogether in a large building, and that tending to increase the mortality, I really cannot say what is the reason of their losing more than civilians ; perhaps the sameness of diet may be another cause.

6404. There is a great deal of difference in the rate of mortality between the cavalry and infantry ?—Yes.

6405. A cavalry man has a great deal more exercise and more work ?—Yes.

6406. May not that have an effect ?—Perhaps it may, and I have on that account always been anxious to see the soldier do more for himself ; in fact, to labour at fortifications or anything that is wanted, as I think that might tend to improve his health.

6407. (*Dr. Andrew Smith.*) Do you not think that men who have been 3 or 4 years in the service have worse constitutions than people in civil life of the same age, and are more liable to be affected by the causes of disease from the various climates in which they have served ?—If you mean those who have been a very long time in foreign climates, the mortality of that class is shown among the permanent pensioners.

6408. (*President.*) That would not apply to the Guards nor the cavalry, for the most part ?—No, I may mention, however, one peculiar circumstance as to the Guards. In Canada, though the mortality among the troops of the line was 16·5 per 1,000 annually, during the same period the Foot Guards lost only 14·5 per 1,000 ; and instead of any great predominance of diseases of the lungs, the proportion who came under treatment on that account was lower by nearly one half than that among regiments of the line at the same stations, while the proportion of deaths was to within a fraction the same.

6409. (*Mr. J. R. Martin.*) Among the several causes which you have mentioned as tending to produce increased mortality among the troops in the United Kingdom, should you say that defective ventilation was the most influential ?—Certainly, I should say that the circumstance of so many living in one house must tend to produce disease ; it is not merely defective ventilation, but there is probably the spread of disease. I do not mean to say how many diseases are contagious, and how many are not. It is said that in large factories the workpeople are far from being healthy.

6410. (*President.*) But the rates of mortality among the men employed in factories are better than the rates in the army, as shown in your book, of the same ages, but they do not sleep in the same rooms ?—No, they do not, which may account for it.

6411. (*Dr. J. Sutherland.*) Are you aware that there is a house in London containing 600 inmates, including all ages, in which the mortality is about 13 per 1,000 per annum ?—I have heard so ; but doubt the accuracy of the calculation, unless extended over a long period.

6412. (*Mr. J. R. Martin.*) Have you any evidence of the comparative influence of the climate of Canada upon European troops recently from the tropics, as compared with the climate of the United Kingdom ?—The only information I have upon that point is the fact that, within seven years referred to in the last report of Dr. Balfour and myself, the troops had all been sent from the West Indies to North America ; and instead of the mortality having increased, as compared with the previous period, I think it rather decreased. At page 195 we stated, "notwithstanding "this deteriorating cause," that is, the arrival of several regiments from the West Indies, "as well as the ex- "posure consequent on the insurrection, the mortality "has been lower than in the preceding 20 years, in the "proportion of 13 to 16·1 per thousand of the strength. "This is partly, no doubt, attributable to the absence "of epidemic cholera during the latter period, by "which a loss averaging 2·1 per 1 000 of the strength "was sustained in the former; but, after making "the requisite deduction on this account, the decrease "has been nearly one per 1,000 of the strength an- "nually, and this although, by the rotation system "of reliefs, the troops in Canada have been con- "siderably older since 1838, than during the previous "period." By the rotation system, the men who went to Canada had previously served for three years in the Mediterranean, and three years in the West Indies, and probably three years at home, or nine years altogether, so that it was one advantage of that system of relief that if they deserted after such service when they went to America, there was no great loss to the public, as their prospective claim to pension was saved.

6413. (*President.*) To go back to the causes of mortality, you say that you do not believe that there is much intemperance in the army ?—Not more than in civil life.

6414. Do not a great many of the cases of absence from barracks include men who have been drunk, and remained out rather than come in drunk ?—That is true, I have no doubt, in some instances, but more generally the absence arises from being with women all night. I think that a regulation has been made recently, to prevent men staying out all night in order to avoid being noted for drunkenness.

6415. You do not know what has been done ?—Not exactly at this moment.

6416. Have you been much in barrack rooms at night ?—Not in this country, I have been a good deal when abroad.

6417. Do you know the state in which the atmosphere gets ?—Yes, and it is very bad indeed.

6418. Must that not necessarily be a very great source of disease ?—I have very little doubt of it ; I cannot understand any other reason for the mortality being so high, unless it arises from that cause.

6419. There is more ophthalmia in the army, is there not ?—Yes.

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6420. Is not that produced by a bad atmosphere? —I have heard another cause recently mentioned as producing it, and that is, the sameness of diet.

6421. Therefore you would set down ventilation, as one cause; dissipated habits, another; want of muscular exercise in the infantry another; and, as another, do you attribute much of it to night duty? —The night duty is so regulated, that I do not think there ought to be much evil from it; we do not find that the police suffer much from night duty.

6422. But their service is shorter?—Yes; but then, in London, the police do duty the whole night.

6423. The service is more severe, while it lasts?— Yes; but if the night air in this country tended very seriously to prejudice health, one would suppose that they would be affected.

6424. The police are on duty eight hours consecutively?—Yes.

6425. And every night?—Yes.

6426. The police divide the time into day and night?—Yes; there is a certain number who choose to be on duty at night, wishing, as I am told, not to be recognized during the day as belonging to the police.

6427. (*Dr. Andrew Smith.*) Is there not more danger from a man going three or four times in a night upon sentry out of a warm guard room, than being continuously out in the cold air all night?—I cannot say, but were it so, the best way would be to keep a soldier out all night; and if you did so there would be an outcry against it, as injurious to health.

6428. The variation of temperature to which a soldier is exposed during a long winter's night, three or four times, must be hurtful; he goes out of the guard room, perhaps perspiring, and mounts guard, and gets chilled?—It is quite possible; but if you admit that principle, the best way would be, to keep him out all night.

6429. (*President.*) If the soldier suffers from that night duty, in consequence of going to sleep in a very hot guard-room, and then suddenly going out into the open air, is not that a preventible cause?—Yes, certainly; and it might be a question, whether they ought to have fires in the guard-room. I know that they are very apt to over-heat these rooms, it is always the case with soldiers if they can.

6430. They put on their great coats to lie down in, in order not to soil their uniforms?—Yes, and also for covering.

6431. They go to sleep and probably perspire?— Yes.

6432. Then they are awakened to go out on duty?— Yes, but the night duty is comparatively slight. I went very closely into that to ascertain what the exposure was, and I think it was only one night in four, in the Foot Guards.

6433. (*Mr. J. R. Martin.*) Your impression is, that as a cause of disease it is comparatively uninfluential? —I think so, and it must always be borne in mind that such a cause would operate everywhere in very nearly the same way. Yet we do not find the mortality so great in Canada, where the troops are much more exposed than anywhere else in winter.

6434. (*President.*) But there is not so much night duty?—Yes, they had during war time, and yet the Foot Guards did not suffer to any great extent then.

6435. Do you see any remedies for these causes of disease?—One remedy is clear. If I were going to build barracks I should build them as detached houses to contain only 10 men, and thus put the troops in nearly the same condition as the agricultural population from which they are taken.

6436. (*Mr. J. R. Martin.*) In imitation of the hutting principle?—Yes.

6437. (*President.*) That would be very expensive, would it not?—I doubt it; for the cost of the barracks at Aldershot is 140*l.* per man, but for much less than 140*l.* you could put up a very fair cottage which would contain 8 or 10 men.

6438. But that is not a fair comparison. The amount of the cost of a barrack, which goes to the actual accommodation of a man, is only one-fourth of the whole, and you must consider that there are officers' quarters, and a chapel, and a school, and a ball court, and a wall round it, and all that you must throw out of consideration?—I should be very ready to do so, and take it at 40*l.* instead of 140*l.*; this for ten men would allow 400*l.*, and a house in one of the cross streets here with eight or ten separate rooms would cost no more The advantage of having one roof and a large building as being cheaper was urged against me in the committee of which I was a member for arranging the description of buildings to be erected at Aldershot. I was placed on that committee by Lord Hardinge when Aldershot was bought; and when I found that there was clay under the surface, that bricks were being made in the neighbourhood, that there was abundance of gravel and sand, and a description of small wood which nobody would buy, about 7 or 8 miles distant, at Sandhurst, I proposed that small huts fitted for 10 men should be put up with these materials by the soldiers themselves, as had been done at Maroon Town, where the accommodation cost only 25*l.* per hut, and lasted six or seven years; but that proposition was negatived, though I contended that 20 or even 10 years might totally alter the state of the country, and render a different kind of accommodation necessary from the expensive permanent barracks which the rest of the committee contended for.

6439. You look upon bad ventilation as one of the chief causes of disease?—Yes, and the men being in masses; if there were only ten men with a non-commissioned officer, and free ventilation round each hut, I think it would be an improvement.

6440. But you may have men massed together without bad results, as is shown by the good health enjoyed in prisons, where the building is well ventilated?—Yes; but men in the army are in a very different state from those in prison; their diet and their labour are regulated in a particular way, and perhaps there are very few conditions in which a man is likely to live longer than in a prison.

6441. Except the monotony of that state?— Perhaps that may tend to prolong life; some rather think that our lives are shortened by excitement.

6442. (*Mr. J. R. Martin.*) Referring to the night duty, has not the comparative healthiness of the drummers been everywhere observed, and has not the cause of that been stated to be their exemption from night duty?—Yes; I pointed out that in one of my reports, and it was in order to get at that fact that the drummer rank was taken separately in my results.

6443. And the non-commissioned officers?—Yes. The drummers mount guard, but they are not much exposed to night duty; they only go round with the officer.

6444. (*President.*) The serjeants sleep in separate rooms, and they are older men?—Yes.

6445. Being older men ought to tell against them? —It ought. The mortality among them, however is, I think, rather lower than among the rest of the troops; but they have advantages in respect of quarters and diet. Among the drummers the mortality is low; but they are usually the youngest of the troops.

6446. (*Mr. T. Alexander.*) Have you not observed in many instances that when a soldier is discharged he is much younger looking than he was before?— Yes. It is a most important fact that men who have been discharged when past forty, after having served in various parts of the world, though no doubt much broken down when they were discharged, regain their health wonderfully after being a year or so at home in their native place.

6447. (*President.*) That is, if they do not die?—Yes.

6448. (*Mr. J. R. Martin.*) Is it not rather more a matter of appearance than of reality, the soldier having a comparatively youthful appearance from more

regular sleep and not having been hard worked anywhere ?—I do not know what it is from.

6449. (*Mr. T. Alexander.*) Have you not observed that a soldier who has been an officer's servant does not age so much as a soldier who takes his regular night duty ?—I could not say that.

6450. (*President.*) Does the officer's servant sleep in the barracks ?—No.

6451. (*Dr. Andrew Smith.*) With regard to night duty, when disease was so very severe in Hong Kong, when more than two-thirds of the men were sick, are you aware that the greater part of those who were admitted into hospital came off night duties ?—I am quite well aware of that. In the West Indies, where epidemics prevailed, and there was considerable sickness and mortality, the greater proportion of the sick came into hospital after being on night duty.

6452. (*Mr. J. R. Martin.*) In malarious countries that observation is universally made ?—Yes.

6453. (*Dr. Andrew Smith.*) It was then recommended in consequence of that being the case to employ a police, so as to diminish the number of men on night duty, and that was followed by very happy effects, the bandsmen, officers, and drummers, not suffering in proportion with the men who had to go on sentry for two hours, and then off again, and so on ; nor did the natives suffer in the same proportion ? —With regard to the natives they are often exempt from causes which severely affect troops who are not natives. But I have no doubt that at such a place as Hong Kong, where the men suffered much from sickness, it was a great object to exempt them from night duty, the human frame being more subject at night to the influence of malarious disease than at other times.

6454–5. (*Mr. J. R. Martin.*) In such countries the native troops should be employed for night duties ?—Yes, where you can ; of course that does not apply in this country.

6456. (*Dr. Andrew Smith.*) In this country, where a great number of sentries are employed in dock yard duty which is very severe, with regard to the proportion of sick afforded by those regiments, are you aware that that is generally much greater than the proportion afforded by regiments in the interior of the country ?—Yes, but there are other reasons for that. It is necessary to discriminate the diseases. In all those seaport towns there is much greater tendency to, and greater facilities for drunkenness, much greater tendency to venery, and much greater facilities for it ; and if you take those two causes into account, I do not think the difference in health will be found very great, but, however, I think it is well worthy of being closely examined.

6457. Are you not aware that fever and pulmonary disease, and diseases of the eye, which cannot depend very much upon drinking, are much more common where dockyard stations exist, or at Dover heights, than in the interior of the country ?—I am not aware that they are ; I think, if there had been any very marked difference it would, in making up the report of the sickness and mortality among the troops in the United Kingdom, have caught my attention. There was more disease from fever at Portsmouth and Chatham ; but in Chatham a very large mass of troops are congregated, and ophthalmia is more readily communicated where you have six or seven regiments together, than at a station in the interior, where there are perhaps only two companies.

6458. Is there not a very great proportion of men, particularly those suffering from pulmonary diseases, discharged before they have been three years in the service, or about that time ?—There are considerable numbers, and for this reason, that the facilities for discharging them without pension before three years have expired, are greater than at any other time. It frequently happens that you discharge a man who has been only three years in the service, because he is not likely to make a smart soldier.

6459. On some account, that account being ascertained ?—Yes, no doubt a great number are discharged under three years.

6460. Is it not, in your opinion, in any way connected with the hard drill to which men are exposed, and is not pulmonary disease brought out when it would have remained dormant for years and years had the man continued in private life to work at his ordinary trade, whereas the drill forces it out at once, and the disease is developed by the drill alone ?—I cannot really say, for I do not know sufficiently well the structure of the human frame, but I should have fancied that military drill would rather tend to set up the frame ; it usually develops the muscles, and I think in the East the practice prevails not merely among the military, but among the natives, of developing their muscles by much the same kind of exercise.

6461. (*President.*) Are you acquainted with the French system of gymnastic exercise that they make all the troops go through ?—I do not know much about it, but I should fancy that it is something similar to drill.

6462. They make them climb up poles ?—Yes.

6463. Every soldier is made to go through it ?—At any rate the light troops are ; I was not aware that every soldier was ; all the voltigeurs are.

6464. Have you heard that the French medical officers attach a great deal of importance to it, as it strengthens the men ?—I presume so.

6465. (*Mr. J. R. Martin*) Are you aware that Dr. Robert Jackson, the great army physician, recommended systematic courses of gymnastic exercise, ball and hammer throwing, leaping, and swimming ?—Yes.

6466. You are probably aware that the same great authority suggested, so far back as 1803, the benefits that might be derived from well-arranged military medical returns, and that he furnished examples of such returns ?—Yes, I believe he did, and there is no doubt that they are of the utmost importance.

6467. (*President.*) What is the latest date of your reports ?—The one before me terminated in 1853, and I may state that we would have gone on with them, but in 1854 the war commenced, and from the commencement of the war I was employed in various ways in selecting all the pensioners that could be made available for the navy or the army in any way, or for the coast guard service or convict guards, and from that time to the present I have been otherwise constantly occupied.

6468. When will another report come out ?—I hope next year, but it must depend on what time can be spared for it from my duties as military superintendent of pensioners.

6469. Are any means taken for their diffusion or publication, so as to give the results generally to the public ?—Being parliamentary volumes, I think 2,000 copies of each have been thrown off ; there has been a very considerable demand for them by the medical men throughout the country, and three or four hundred copies were furnished to the medical officers of the army ; some have been sent to foreign countries, and there translated, and there was some years ago a great deal of discussion in the French Chamber of Deputies as to the expediency of having the same system introduced into their army.

6470. Is there any annual medical sanitary report which contains or analyses the reports of the army medical officers ?—None ; but for sanitary purposes, I rather doubt whether an annual report would be of much service. The object of statistics is to accumulate facts from a long period of time, and then to draw deductions from a broad basis in which all minor errors disappear.

6471. But if you had annual statistics you need not draw your theory from any one annual report ?—No ; if care be taken in that way there can be no objection to have them annually. I may mention that till the late war it was always my practice to prepare for the Secretary-at-War an annual report showing the loss for the previous year, the details of which were usually communicated by him to Parliament at the time of passing the estimates.

6472. Do you think it would be possible to give the rates of mortality in the whole army ?—Yes ; quite

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possible, and the rates of mortality at every station. I had intended whenever I had completed the next ten years to have thrown the contents of the whole volumes together for 40 years, and to have drawn deductions therefrom on an extended scale.

6473. I am afraid that the rates of mortality would show very ill if you took the whole army together ?—General statements of that kind are of comparatively little utility ; it is the separation of the mortality according to stations and classes which leads to the best means of checking the loss. In the West Indies, for instance, it was always known that the mortality was very heavy ; but the white troops and the black troops had been mixed together, as well as the different stations ; one general average was taken, which showed a loss of about 6 per cent. ; but when we came to examine into the particular places where the mortality occurred, we found that the mortality was, in some, 16 or 17 per cent., and at others only 3 or 4 ; that in some the black troops suffered very little, and the white troops a great deal, so that we were thereafter able to have the black troops placed where they suffered the least, and the white troops arranged in the same way.

6474. That would not lead to any inaccuracy in the whole. You would have a system of tables marking the difference between the white and the black troops ? —Yes. But when you give all the details of the out-stations, there is less fear of making any mistake ; If the mortality of the whole army were given, I do not think that the average would be more than 3 per cent. over all the various stations, as you have a very large proportion at home, and in healthy colonies ; this would not give you any idea of the mortality in India, which has averaged 8 per cent., or nearly so, for 40 years.

6475. In addition to a table showing the mortality at each station, there should be one giving the whole mortality ?—Yes ; that might be of use as a general statement, but it would not lead you to the changes required, being what are chiefly wanted.

6476. Looking upon these statistics as having been of immense advantage to the army, I want to know whether by a more frequent repetition of them the advantage could not be still farther increased, as it would be a great thing for the military authorities to be able to watch the rates of mortality and attempt to apply remedies ?—That is not neglected. There is a return received at the War Office monthly from Dr. Smith, stating the loss every quarter at all foreign stations from which the returns have arrived, and the loss at home for that month, together with the strength. It is my practice to compare the strength and loss as there detailed with the adjutant-general's returns, and to notice any important differences ; also to show where the mortality has exceeded the usual average. The return then goes before the Secretary-at-War, who calls for any further information that may be necessary, and thus has always at hand information on the subject, in case of any notice being taken in Parliament about heavy losses by climate or otherwise.

6477. In the same way as in London, where there are two millions and a half of people, they publish a weekly account of the deaths ?—Yes.

6478. And they publish a quarterly account of the mortality in England and Wales ?—Yes.

6479. Could not a quarterly account be made up, of course in arrear, on account of the distance of some of the stations, of the mortality of the whole army ?—Yes ; but I do not think you would derive much benefit from it. Dr. Smith, as I have already stated, gives a summary of the quarterly returns arriving in each month ; the Secretary-at-War has that, and I think that a return annually would be as often as is necessary for general purposes ; such a return is made up for him, annually, previous to the estimates, from the sanitary returns, so far as received. It has often occurred to me, however, that it would be a very good thing if that were handed to the medical board, to have a summary of all the information that has been obtained from the medical stations abroad relative to the origin of the diseases, and their treatment added to it, for professional purposes.

6480. The organization of the army gives you great facilities for obtaining accurate statistics ?—Yes ; you not only get returns from each regiment but from each station, and can trace the men from one station to another ; you also know the medicine that is prescribed, and that the men take it, which is not the case in civil life.

6481. (*Mr. J. R. Martin.*) In civil life you have no history of the disease, nothing but the ultimate result ?—No ; and you do not know how that ultimate result has been produced.

6482. (*President.*) In your quarterly statements to the Secretary-at-War, you give not only the actual rates of mortality and the amount of sickness, but the causes of sickness ?—These are stated usually by Dr. Smith, and I calculate the per-centage.

6483. So that you could see what fatal influences each regiment has been exposed to, and what is its sanitary condition ?—Yes, and that goes on for the the foreign stations every quarter.

6484. You get the same thing at home, do you not ? —Yes, monthly; but I very seldom go into the results at home, as the troops are moving about so much, that it would be difficult to draw accurate conclusions from the returns.

6485. Do you think there would be any difficulty in making a complete return, if necessary ?—No; at a year's distance or thereabouts, if it was of any importance ; but I think for statistical purposes ten years would be better.

6486. But if the public were fully aware of the degree of mortality that exists in the army, there would be less difficulty in getting from them the means of remedying the bad sanitary influences which affect the health of the army ?—The public mind has been drawn so much of late to that subject, I should hope there would be no difficulty now.

6487. (*Mr. J. R. Martin.*) But towards the end of a 20 years' peace, that feeling would be very much diminished ?—Perhaps. There is one subject deserving particular attention, viz., the long service abroad, which increases the pension list at home to a very considerable extent. 16 or 17 years' service in the East Indies is too long ; it is quite sufficient to break up the constitution of a man, and make him unfit for service elsewhere ; every effort should be made to reduce the period of service in the East Indies to 6 or 7 years.

6488. (*President.*) What is the period of service in the East Indies professedly ?—Professedly it is 15 years, but it is actually, I think, 18 or 19.

6489. Some of the lancers who came back had been out 21 years ?—I think they had. There is nothing that appears more necessary with reference to the pension list than not to retain soldiers too long in an enervating climate.

6490. In the colonies the turn of service is 10 years, is it not ?—Yes, in healthy colonies ; only three years in the West Indies, three years in the Mediterranean, and three years in North America.

6491. You would like to put the East Indies on the same footing as to duration of the period ?—Seven years there I think would be long enough ; and the facilities of transport of late years would admit of your doing so with economy. I think you would save the constitution of the men, and that they would not be worn out in the way they are there.

6492. When regiments are coming home, some of the men volunteer into other regiments ?—Yes, but I think it would be good to prevent that volunteering; though if a man has served 16 years, and knows that he is not fit for home service, it is perhaps better to volunteer into another regiment and complete his 21 years, than return home to be thrown at an early age on the pension list.

6493. (*Mr. J. R. Martin.*) Do not the soldiers object to come home after long service in the East Indies ?—Yes.

6494. (*President.*) Do they intend to stay in India? —No. They remain there till they have acquired a right to the pension. If they came home under 14 years they might be discharged without any pension at all, and if discharged between 14 and 21 years they would only get a modified pension of 7*d.* or 8*d.* a day. There seems no difficulty now in relieving the troops in India by the Mediterranean and the Red Sea. In every case it would be a good thing to have the reliefs more frequently.

6495. In forming your statistics you get the materials from the army medical department to a great degree?—Originally I got the materials altogether from the army medical department, but latterly, since we have had sanitary reports, I get the materials from them. Whenever I see any large amount of sickness under any particular disease, Dr. Balfour, who assists me in everything connected with statistics, and has been associated with me in all these inquiries, reads the reports upon that particular crisis, to ascertain when it commenced, when it ceased, and what measures were adopted, all of which particulars are then detailed in the printed report for Parliament.

6496. Do you obtain any assistance from the published reports of the army medical officers ?—No. I think very few of them are published. I read occasionally the reports which are sent home in manuscript.

6497. (*Mr. J. R. Martin.*) You check also the accuracy of the statements derived from the medical returns by the War Office returns ?—Yes.

6498. (*President.*) Writing statistics forms no part of medical education ?—I presume not, when I had to take it up.

6499. (*Dr. Andrew Smith.*) Are you not aware that Sir James Macgrigor, long before these reports were commenced, had been constantly endeavouring, through the Secretary-at-War, to get a board appointed for the purpose of analyzing and seeing what could be done with the records of his office?—I have no doubt of it. I think I remember one or two letters on the subject. The medical profession is, I conceive, deeply indebted to Sir James Macgrigor for having collected those materials ; and I have no doubt he would have had them brought into shape long before, had the required assistance been afforded.

6500. Have you not heard that he was impressed with the importance of the subject, and that he endeavoured from time to time to get a sufficient number of medical officers attached to the army medical department to prepare reports of the kind ?—Yes.

6501. And he was refused on account of the expense? —Yes. And had I not obviated that difficulty, it would perhaps have proved a barrier to the reports ever being published. When I was engaged upon them I for a year or two got nothing, but I saw it was a matter of very great importance, and I hoped that beneficial results to the army and even to myself would be derived, in which I have not been disappointed.

6502. (*Mr. J. R. Martin.*) In fact, you commenced as an amateur ?—Yes.

6503. Eventually you became a public functionary in that department ?—Yes.

6504. (*President.*) As the sanitary state of an army contributes very much to its efficiency in the field, in peace, you say, since your attention was called to the subject, the rates of mortality in some of the colonies have been diminished ; suppose the rate of mortality could be reduced by proper sanitary precautions, to the same amount as in civil life, would not that have a very considerable effect, both on the expenses of recruiting, and on pensioning?—There is no doubt of it. In every way that you reduce the mortality on foreign stations, you diminish the expenses for recruiting, and for every man you save you gain 20*l.* or 30*l.* at least.

6505. (*Mr. J. R. Martin.*) In the East Indies, and the more remote colonies, the actual prime cos of a soldier has relation to the distance to which he is to be transported ?—Yes.

6506. In the East Indies, the expense has been always reckoned at 100*l.*, including the cost to the state of training his substitute ?—Yes ; but I should think that that is a high valuation, and better fitted for former days ; I should say at least 50*l.* or 60*l.* would be a fairer amount.

6507. As stated by you, on your last examination, the amount in money lost by the unnecessary sacrifice of human life, in the East Indies, would come to many millions ?—There is no doubt had it been politically practicable to keep the troops at healthier stations, a great saving of life, and consequently of money, would have resulted ; but the intelligence from India, within the last day or two, shows how much other considerations are connected with that question.

6508. (*President.*) The greater the health and comfort of the soldiers are, the more easy the recruiting would be ?—Yes.

6509. Have you made a calculation as to what the soldier's wages are, taking money and kind together ? —Yes. At the time that the Limited Enlistment Bill was agitated, there was considerable opposition to it by many military men, and very high authorities. With the view of removing that opposition, I investigated carefully what the soldier's advantages were, as compared with the wages then paid in civil life, in the agricultural districts. I then inquired whether he had generally availed himself of the option he already had of leaving the service, for there had been a regulation several years in existence, that a soldier might have his discharge after 14 or 15 years' service, if he thought proper to accept it, without a pension ; or after 15 years' service, with considerable money advantages, though still without a pension ; and I found that though two or three per regiment were allowed to go per year, not half that number went. The advantages of the soldier, including his pay, his beer money, the cheap rate at which he was supplied with food, his house rent, medical attendance, and clothing, were then worth about 12*s.* a week.

6510. Did that include his prospect of a pension ? —Yes. And at that time, in none of the agricultural districts, except Yorkshire, was anything like that amount given for wages. Upon that explanation the opposition was removed.

6511. (*Mr. J. R. Martin.*) Does not the enormous sacrifice in money alone, through the unnecessary sacrifice of military life, go to establish the truth that the cost on account of an efficient medical establishment is hardly to be taken into account in the comparison ?—If there be anything deficient in the medical establishment, I think it is impossible to place a money value on it.

6512. I was taking the money value alone, in reference to your own statement ?—If you could not get as efficient a man for that price as you ought to have, the price should be increased ; but there is a great question connected with that, viz., the pay of all ranks in the army. For instance, the pay of a lieutenant-colonel is the same now as in the reign of Charles the 2nd, while the pay of the surgeon and assistant-surgeon has been, I believe, increased three or four times. The great difficulty that I see in giving such a rate of pay as would secure the highest possible efficiency is, that it would place the medical man in a superior position as to pay than the officer commanding the regiment.

6513. There is a financial difficulty there, and looking only to the ascertained enormous sums which have been lost, compared with the immense saving to be effected by an efficient medical establishment, do you not consider that it is a matter deserving the highest consideration how that is to be obtained ?—Most assuredly. There can be no question of it, because our establishment, which is now only 100,000, may, in the event of war, be increased to 300,000, and some of the officers whom you are training now would then require to be superior officers of that larger army, and ought to be qualified for that duty.

6514. If in 30 years, at one station in the East Indies, 150,000*l.* worth of the lives of European soldiers has been lost, how small, as compared to that

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sum, was the salary of all the medical officers there employed, during those 30 years ?—No doubt, but the difficulty as to giving a proper rate of pay to medical officers, rests mainly, I apprehend, in the relative rate of pay of the other grades.

6515. Taking a military view of such a question alone, would it not be right to look to the good that might be effected for the soldier, leaving it to the authorities to deal with the question of economy ?—The best way is to get the most efficient.

The witness withdrew.

Dr. JOHN SUTHERLAND further examined.

Dr. John Sutherland.

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6516. (*President.*) Some time ago you were requested, along with Drs. Alexander and Mapleton, to inspect the hospitals at Haslar and Portsmouth,—will you state the result ?—The situation of *Haslar Hospital* is not very good. There are close to it extensive mud beaches with vegetable matter, exposed at low water to the action of the air and sun. The hospital forms three sides of a quadrangle, surrounded by open garden ground. The quadrangle is laid out as a garden. The exterior is clean and free from nuisance, and the building is exposed to the sea breeze, but also to emanations from the mud beaches. Each line of buildings forming the three sides of the quadrangle is double, with a space of about 30 feet between the walls, so that the hospital consists of a double range of wards all round, like two letters E, one within the other. These ranges are connected by buildings at different distances, and there are large roomy staircases, with ample means of ventilation. The common wards we examined contained 14 beds, and were 59 feet long, 23 feet 7 inches broad, and 11 feet 8 inches high, with five windows opening into the external air on one side, and two windows opening into the space between the double line of wards on the opposite side. The cubic contents are about 17,327 feet, affording above 1,200 cubic feet of space for each patient. The beds are placed at 8 feet distance from centre to centre. The wards are provided with hot water apparatus for warming, and with open fireplaces ; the former method of warming is seldom or never used. The ventilation is effected by opening the windows, or by occasional glass louvres in the upper window sash, and generally there are four ventilating bricks opening into the outer air near the ceiling of each ward, and three small ventilating apertures communicating with the chimney. The ventilating bricks are protected by moveable covers. In wards where the windows were shut these ventilators were altogether insufficient for preserving the purity of the air. The wards felt close and the atmosphere offensive. The wards in which the ventilation appeared to be sufficient were those in which the windows were open, or the number of sick very small in proportion to the size of the ward. The water-closets are self acting, and are placed in a small apartment communicating with the ward. They were tolerably clean and free from effluvia. There are quarters for field officers consisting of two rooms ; for officers who have a separate cabin on board ship, consisting of one room ; engineers are accommodated five or six in a room ; and midshipmen have a long room, part of which is divided by bulk-heads into separate sleeping places. The hospital was beautifully clean in every part, the floors well rubbed, the walls and ceilings brightly whitewashed, and the light abundant. The officers' quarters are carpeted and suitably furnished. The kitchens are in the basement of the building. They were in excellent condition, amply provided with boilers, and along one side was a large iron range for cooking by gas. There is no lift for taking up the diets to the wards, these are carried up stairs by the nurses. The kitchens were imperfectly ventilated. There is a separate room on the basement for baths, the accommodations in which are of an ordinary character. A large wash-house has been erected separate, and at a short distance from the main building. It appears to contain all the latest improvements, such as boiling by steam, steam washing and drying machines, and centrifugal wringers. It contains a steam-engine and steam boilers for these various purposes. This establishment was undergoing repairs. The water supply is obtained from two Artesian wells, but at present it is neither very good nor abundant. It is laid on to every flat of the hospital. Female nurses are employed in all the wards, and judging from the neatness and cleanliness around the sick, they appear to be efficient in their duties. The drainage of the building is stated to be, on the whole, good, and is conducted straight to the sea. There is a lunatic asylum on one side of the hospital containing at present 126 inmates, consisting chiefly of men who have suffered from exposure to climate, malarial fevers, or who are affected with a morbid state of the digestive functions, which were stated to be among the more common causes of the mental disease. Drinking was said to be a rare cause. The mortality among the lunatics is about 11½ per cent. per annum. There is a separate garden and exercising ground for these patients. The internal arrangements of the lunatic wards appear very good. They were perfectly clean and well ventilated. There are accommodations for officers of all ranks as well as for seamen. They are hardly ever returned to the service in the event of recovery, but are kept till death at the expense of the government. Haslar hospital appeared to have comparatively a small number of sick, and to have a very considerable amount of unoccupied accommodation. The hospital is lighted with gas.

The military hospital at Portsmouth is situated across the opening of one of the bastions, with a high rampart rising at a short distance behind it, outside of which is a glacis and broad ditch full of water having a current through it. The front of the hospital is towards a public street, between which and the front is a small gravelled court. It is 3 flats in height, the lower flat is chiefly occupied by officers, and on the upper flats there is accommodation for about 279 sick. The hospital consists of a single building, with two slightly projecting wings, and between these two wings, along the whole front of the building, there are open corridors on each flat, formed of brick arches resting on iron columns. These corridors are about 10 feet broad, they are paved with asphalte. The columns are about 10 feet high, the wards are long and narrow ; they are 48 feet in length, 22 in breadth, and 11 in height, and extend from back to front of the building in their longest dimensions. They have two windows at each end, and one door opening on to a staircase extending from top to bottom of the building. Some of the wards are divided by a transverse partition into two smaller wards, having each two windows only at one end. The ventilation is provided for by two ventilating bricks, inserted in each wall front and back. The larger wards have two fire-places, and each flue has a small Arnott's ventilator. There is a double ventilating brick near the floor at each extremity of the ward, intended to supply an air trunk which passes under the flooring, and opens by a circular grating in the floor of the ward ; each of the larger wards has two such gratings. In the roof, exactly over the floor gratings, is a small ventilating tube for affording egress to the foul air ; it passes along the ceiling to the upper ventilating bricks. Considering the size of the wards and number of sick in each, these ventilating arrangements are so defective that they can hardly be considered as producing any beneficial effect upon the atmosphere ; indeed, the open windows appeared to be mainly depended on, and even with

these, the natural ventilation was very defective, on account of the long narrow shape of the ward, the great distance (48 feet) at which the windows are placed from each other, and the large number of sick contained in each ward. The drainage was said to be efficient—it is carried down to the harbour, and the outlet is below low-water mark. The water-closets are placed in projections on each flat, they are separated from the staircases into which they open by a lobby, lighted and ventilated by a window on each side. There is a sink in the same outbuildings. These closets were not clean, and some of them were offensive, but the ventilation was sufficient to keep the effluvia from entering the wards. None of the internal walls of the wards are plastered—the walls consist only of whitewashed brick. The stairs and passages are of wood, and were by no means clean, and the wards themselves admitted of great improvement in this respect. The larger wards have 11,616 cubic feet of space. They contain 17 beds, placed 5 feet from centre to centre, and the amount of cubic feet of space for each patient is about 680 cubic feet. The smaller wards contain nine patients with the same cubic space. This hospital has been constructed on a very defective plan—the wards are too long between the windows from back to front, the means of ventilation are wholly inadequate—the cubic space for each patient is about one half of what it should be, the hospital is not clean, and, as there are no female nurses, it is destitute of that neatness and order observable at Haslar. Its local position is not good, though perhaps as much so as could be obtained in the locality. The ablution room is badly lighted, and there is no proper bath accommodation. This hospital affords in every respect a striking contrast in its sanitary condition to Haslar hospital, though there are some points in which the latter would admit of improvement. The kitchen at Portsmouth hospital is situated in a detached building, and appeared suitably provided with the means of cooking diets.

6517. What is the width of the wards at Haslar?—23 feet 7 inches between the opposite windows, and they are 59 feet long.

6518. Since you examined these hospitals you have also made an examination of a number of hospitals, civil and military, at Paris and Brussels; will you now state what are the chief structural differences between the French hospitals and those at Haslar and Portsmouth as regards the wards for the sick?—The wards in the French hospitals are placed the lengthway of the buildings, and the distance between the windows is much less than in Portsmouth hospital. In the more recently constructed French hospitals the distance between the ranges of windows across the wards is about 30 feet, and at Portsmouth it is about 48 feet. The structure of Haslar hospital resembles that of the French hospitals. The distance between the windows on opposite sides of the wards at Haslar is about 24 feet, or about one half what it is in Portsmouth military hospital. I am of opinion that, as a point of healthy construction, the windows should be placed along opposite sides, and not at opposite ends of the wards.

6519. In the hospital at Portsmouth is there a long narrow ward lighted at each end?—Yes.

6520. At Haslar the wards are lighted laterally?—Yes.

6521. What comparison would you make between the French and British hospitals as regards light and the means for natural ventilation?—The usual number of windows in French hospitals is one window to two beds, and two beds are placed between every two windows. In the Portsmouth hospital there are four windows for 17 sick, and there are eight or nine beds between each two windows. In Haslar hospital there are seven windows for 14 sick, and the sick are arranged between the windows in a somewhat similar manner to the arrangement in the French hospitals. The number of windows to sick at Haslar and in the French hospitals is double what it is at Portsmouth, and the windows are also much larger, and better placed for light, ventilation, and reading. There should never be less than one window to two sick.

6522. How do these different arrangements of windows affect the ventilation of these hospitals?—The natural means of ventilation arising from the larger number and better arrangement of windows are amply sufficient in the French military hospitals and at Haslar, while in the Portsmouth military hospital they are very defective.

6523. What is the comparative height of the wards?—The newer wards in Val de Grâce are about three feet higher than they are at Haslar, and nearly four feet higher than at Portsmouth hospital, the wards of which are lower than any I am acquainted with as having been specially built for hospital purposes. The better wards at Brussels are higher than those at Val de Grâce. At La Riboisière the wards are $6\frac{1}{2}$ feet higher than at Portsmouth. The wards at Portsmouth and Haslar are much too low, but at Haslar the defect is to a certain extent remedied by the greater distance between the beds.

6524. What comparison would you make as to cleanliness?—Haslar hospital is perfectly clean for all sanitary purposes, and will bear a comparison with any French hospital in that respect; but the French military hospital of Val de Grâce, and the civil hospitals generally, are much cleaner than Portsmouth hospital was when I saw it.

6525. How would you compare the arrangements as to windows and beds for lighting the wards?—The arrangements of windows and beds for light are very much better in the French hospitals than in the Portsmouth hospital, and are on the same plan as at Haslar.

6526. What difference is there in the cubic space allowed for the sick?—The beds are much wider apart in the foreign hospitals, and the cubic space in the military hospitals at Paris, and in the best wards at Brussels, is nearly three times the amount per bed that it is at Portsmouth hospital. In the generality of civil hospitals in Paris and Brussels the cubic space is about double what it is at Portsmouth, and the cubic space allowed at Haslar is not much less than double also.

6527. What are the comparative merits of the methods of supplying water to hospitals?—In the French hospitals the water is equal in quality to ours. The supply is unlimited, and at Val de Grâce there are water vessels with taps in the wards. The defect is that the water is not laid on constantly on every flat, and that it is not supplied to water-closets as at Portsmouth and Haslar. At Haslar they have Artesian wells, and there is a tank to supply Portsmouth hospital. In London and in many towns in England the water supply for hospitals is still defective, for it is received and stored in cisterns instead of being always drawn from the supply tap. In every hospital where the water is not laid on over the whole building, and drawn direct from the mains at all times, instead of from tanks or cisterns, the water supply is defective for sanitary purposes. I do not consider that there is any very decided advantage in this respect at present on either side of the channel, except as regards water-closets, and the better supply of those towns in England and Scotland where improved distributing arrangements have been introduced lately. We have towns and hospitals in those towns that receive water direct from the mains.

6528. What is the comparison as regards water-closets?—The military hospital at Portsmouth and the hospital at Haslar have a very decided advantage over all the hospitals, civil and military, in Paris and Brussels in this important particular. In the foreign hospitals there are only open latrines, all more or less offensive, and with few exceptions arising from position and free ventilation, tainting more or less the air of the wards and staircases. Although the water-closet arrangements in the two British hospitals are not all that might be desired, they are very greatly superior indeed to the latrine arrangements in the foreign hospitals.

6529. What comparison do you draw as regards lavatories and baths?—The lavatories at Haslar and Portsmouth admit of much improvement; but still the principle of a separate lavatory is admitted, while in

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the French hospitals the sick as a rule wash in the wards. Both arrangements, lavatories and wash-hand basins for the wards, are, however, requisite. With regard to baths, the arrangements at Haslar are of a very ordinary character. Those at Portsmouth hospital are very defective. In Val de Grâce there is a regular bath establishment—good of its kind, but not so perfect for hospital purposes by any means as the establishment of La Riboisière.

6530. Did you make any observations as to the apparent effect of the presence of female nurses ?—In all the foreign hospitals we visited, the impression produced on my own mind was, that independent altogether of the effect likely to be produced by female nursing on the sick, the mere presence of a sister in the ward had a most beneficial effect both on the sick themselves and on the neatness of the wards, as well as on the discipline. Nothing could exceed the quiet and order of the wards. The same observations were made by all the medical and other officers connected with the civil and military hospitals abroad, with whom I conversed on the subject. I was struck also with the same fact as regards Haslar.

6531. (*Mr. J. R. Martin.*) It would appear, therefore, that independently of the actual service performed by these nurses, their presence has had a humanizing effect upon the patients ?—Most certainly. I had an interview last week with Dr. Zdekauer, who came here from St. Petersburgh to examine into our hospitals, and he made a similar remark as to the effect of female nursing in their hospitals.

6532. (*President.*) Have you any comparison to make as to the bedding ?—Except in the use of bed curtains in certain civil hospitals abroad (of which I disapprove), and bed curtains are not used in military hospitals, the bedsteads appeared of better construction than they are either at Haslar or Portsmouth. They have more conveniences, such as shelves. The bedding in the foreign military hospitals appeared to be on the whole softer, warmer, and better. It was, in fact, excellent and very clean.

6533. You have heard the statements made in evidence about the Chatham hospital; could any military hospital you saw abroad be described in similar terms ?—I have not seen Chatham hospital, but so far as the impression goes as to its sanitary condition produced on my mind by what I have heard in the room, I should say that no hospital we saw abroad could in any way be so described.

6534. Putting together the sanitary advantages and disadvantages of the Paris and Brussels military hospitals, how would you compare their sanitary state as a whole with that of the British naval and military hospitals ?—Haslar hospital, with a little improvement in matters of detail, could easily be made to surpass for all practical purposes the military hospitals at Paris and in Belgium; but Portsmouth hospital is very far behind them, as is also Chatham hospital.

6535. Is there any reason why the British military hospitals should not equal those of France and Belgium ?—None whatever; we ought to equal them in hospital construction, and with our habits we ought to surpass them in all our hospital arrangements.

6536. Have you formed any opinion as to the best system of ventilating hospitals ?—Yes; natural ventilation by doors, windows, and fire-places, aided, if need be, by ventilating shafts from the ceiling of each ward. All hospitals should be so constructed, both for warming and ventilation, as to render mechanical ventilation unnecessary. The necessity for mechanical ventilation is a proof of defective hospital construction or of scarcity of fuel. This remark, however, only applies to hospitals.

6537. How then does it happen that, with a system of hospital construction of which you approve abroad, artificial ventilation is nevertheless resorted to ?—In those exceptional cases to which you refer artificial ventilation is only used in cold weather, mainly for the purpose of economically warming the air supplied to the wards, for in warm weather, when warming is not required, the ventilating machinery is not used.

6538. And the windows are open ?—Yes.

6539. Are there any circumstances under which artificial ventilation could be advantageously used in hospitals ?—Yes; where the hospital construction is defective, and the natural means of ventilation consequently inadequate, or where great economy in fuel is requisite; for with artificial ventilation you may warm an entire hospital with the same single fire that heats the baths, washes and dries the linen, and supplies steam power for ventilating, and for all other purposes. But warming by radiant heat from open fire-places is much better than using heated air.

6540. (*Mr. T. Alexander.*) At La Riboisière on the male side the ward windows were all shut ?—They were partly shut when you were there, but the ventilation there was very defective. It was better on the female side where they were open.

6541. (*Mr. J. R. Martin.*) In the case of a barrack or a hospital, it would appear from much that has come before the Commissioners that it is not to the actual size of the room or the ward that we may refer the defective ventilation and the unhealthiness of the inmates, but to the fact that where the apartments are large there, owing to faults of construction, ventilation is everywhere most defective, whereas in small detached houses or huts we are sure to find more windows and doors proportionately ?—Yes; that is a very important point. It involves a great principle, namely: the extent of the window surface that you should apportion to a given cubic space; in huts generally you will find the amount of window space much greater in proportion to the cubic contents than in rooms.

6542. Does not it follow from what you have just stated that where the large rooms of barracks and the large wards of hospitals are objected to, the question of the relative modes of ventilation in those large rooms, and in the huts of which we have spoken, has not been sufficiently taken into account ?—I do not think that that relation has been sufficiently understood, because I should say that up to this time observations regarding it have been more the result of accident than of design.

6543. (*Dr. A. Smith.*) Do you think that it would be possible to ventilate efficiently, by any means which could be employed, a large building in the situation of the Portsmouth military hospital ?—I am of opinion that it would be very difficult, with the construction.

6544. The bastions ?—Yes; the local position is unquestionably defective; there are high bastions behind the hospital which interfere with the natural ventilation.

6545. (*Mr. J. R. Martin.*) Would not artificial ventilation apply in such cases as you have described? —Not in a case like that; when we were down, the windows were open, and still the ventilation in the ward was not sufficient.

6546. Machine ventilation ?—In a case like that, machine ventilation might come into beneficial operation.

6547. (*Dr. A. Smith.*) Are you aware that seven sites were pointed out, and that that was the only site that furnished anything like a position where one could possibly think of putting a hospital ?—The only observation that I can make upon that is, that sites for hospitals must be much rarer than I had the least conception of.

6548. (*Mr. J. R. Martin.*) Was the question of purchasing a site, already occupied by houses, taken into consideration ?—The object, I think, was to have the hospital site within the lines; but Portsmouth itself is in a very bad sanitary state altogether. It is one of the worst sanitary towns in Great Britain. It has refused to have the Public Health Act, or any sanitary measures applied to it.

6549. (*Dr. A. Smith.*) Considering that that was the only site that could be obtained, the only site that the government could give, do you conceive it possible to have raised a building, possessing all the requirements, as to the wards, and other circum-

stances necessary for the proper ventilation of the hospital, for cleanliness, and for the number of sick, which it was estimated would generally be 340 men? —I think it would have been possible to have constructed a hospital with those requirements upon that site, but still the site is not a good one. As a matter of construction, it would have been perfectly possible to have erected a hospital there, with sufficient sanitary appliances, so far as the buildings are concerned.

6550. (*President.*) You have heard the evidence given on the subject of medical education, and you have also inquired into the system at the Val de Grâce; will you state to the Commission your opinion upon the two systems, with special reference as to the question of military hygiene?—Hygiene is not taught systematically in any medical school in Great Britain. There are professorships in several foreign schools, but none in this country. Subjects included under the general head "hygiene" are discussed by lecturers on other departments, such, for instance, as materia medica, and dietetics, medicine, &c.; but there is no systematic course, and no practical training, such as is aimed at in the instructions given in the "Ecole Impériale d'Application," at Val de Grâce. With us at present, practical sanitary knowledge can only be acquired by a man who devotes himself to it for years, while in the French service provision is made for teaching it. The French method is therefore very greatly superior to ours. In the practical application of knowledge so acquired the French Government has just issued this document. It is an instruction for conducting army medical inspections, issued just before we were in Paris. The medical inspectors of the French army, of whom there are seven, are charged, among other duties, with the sanitary supervision of the districts allotted to them. Along with the commanding officer, the barrack officer, and the medical officer, the inspector is required to make a sanitary examination of the position and vicinity of military buildings, the cubic capacity of rooms, the number and size of the windows and doors, the ventilation, and the state of cleanliness of all parts of the barrack. He collects any observations that may have been made on the salubrity of different localities, and if necessary, gives his advice on them to the Minister at-War. He inspects the kitchens, to see that their ventilation, flooring, drainage, the cleansing of utensils, &c., are sufficient for health; also the composition and preparation of the mess, and gives such advice as may appear necessary in all points relating to their hygiene. He examines the condition of the water used by the troops, and can direct its analysis. He visits the canteens to inspect the quality of food and drink sold there, and insists on due surveillance being kept up over them. He has also to inspect the sanitary state of military prisons. He insists, when necessary, on personal cleanliness, and the use of river and sea baths. He inquires into the kind of gymnastics in use, the prophylactic measures against syphilis, and the sanitary precautions adopted in regard to recruits. He examines and verifies the vaccination of the troops. He inspects the sanitary condition of regimental infirmaries and of convalescent wards in hospitals. One special part of his duty in visiting hospitals, is to call the attention of the medical officers to those scientific and practical points of hygiene which specially influence the health of soldiers, such as the knowledge of climate and medical topography, and of the special sanitary conditions and diseases prevalent in different localities. He enforces on all the necessity of continually studying the life of the soldier in the relations in peace and war in which he may be placed; and he insists on the duty of studying the various causes which can affect the health of the soldier, and of indicating to the competent authorities the means of destroying or diminishing their activity, and that this duty is at all times necessary, and is one which may render the greatest public services. He is required also to call the attention of the medical officers to the utility of studying and discussing together the causes, nature, and treatment of prevailing diseases or epidemics, and the sanitary necessities and improvements of which the service seems capable with respect to them. After the inspectors have completed their mission, they are required to meet for the purpose of submitting to the Minister-at-War a report presenting those general conditions applicable to the hygiene of the troops to the medical service and hospital establishments, and indicating improvements the adoption of which may appear to be advantageous. While in Paris, I made the inquiry of one of the inspectors how this process answered in case of an epidemic appearing in a corps or garrison, and I was told, that in such a case the facts would be notified day by day to the conseil de santé, at Paris, who would, day by day, state their views to the Minister-at-War.

6551. Is it your opinion, from your own experience, that such a course of education as you have described is really necessary for the army medical officer?—Most certainly—we find as a matter of experience, that in civil life few medical men have as yet obtained a practical acquaintance with the subject, chiefly, I believe, from defects in the system of medical education, which has hitherto been directed rather to giving prominence to the cure than to the prevention of disease. It appears to me that the practical knowledge of prevention ought to be at least as complete as the practical knowledge of cure is in every department of the medical profession. And there is greater need for this in the army than even in civil life. The army medical officer should be a true officer of health, trained in dealing with all subjects affecting the health of the soldier.

6552. (*Mr. J. R. Martin.*) Do you consider that an officer who enters upon his duties in the army, deficient in all those instructions which you have described, has to acquire his knowledge of hygienic science in future life at the absolute expense of the soldiers?—He is in exactly the same position as a medical man in civil life is, as he is taken from the same class. Medical officers in civil life require to gain sanitary experience. I had to get my experience just as other people have; but what I desiderate both in civil life and in the army is, that other people should not have the same difficulty in acquiring experience. I think it might be all, or at least a large part of it, prevented by suitable training and suitable education beforehand.

6553. (*President.*) Should the army medical officer know all the articles of food, with their relative value, and how to detect deficiencies or adulterations?—Certainly.

6554. And the effects of particular articles of diet on healthy men in different climates, and under different conditions as to labour, exposure, and fatigue?—Certainly.

6555. And diseased constitutional states likely to arise from the continued use of the same articles of diet?—Certainly.

6556. Under these circumstances what changes are required—the means of testing the purity of water, and other drinks, and also the best methods of purifying water for troops?—Most certainly.

6557. The characters and qualities of drinks which the soldier is likely to meet with in different countries?—Yes.

6558. The question of clothing and accoutrements, as regards materials, qualities, adaptation to climates, the science of medical topography, climate, waters, and local diseases of all countries where war is likely to be carried on?—Yes.

6559. And physical geography, conditions as to soils, subsoils, geological structure, natural drainage, marshes, lakes, banks of rivers, and the conditions connected with these likely to affect the health of the troops?—Yes.

6560. How to detect in the sick indications of the presence of organic matter in the air or water of a district, by its effect in modifying disease?—Certainly.

6561. The special effects of particular kinds of shelter in tents, huts, bivouacs, of damp soils as

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influencing the air in these, and the results to the health of troops ?—Yes.

6562. The effects of crowding and defective ventilation, and the best means of remedy—the best methods of improving the surface and subsoil drainage, and the external characters of military positions likely to affect the health of troops, with the means of remedying these, if remediable ?—I think that is highly necessary.

6563. The local conditions affecting the health of towns, villages, and buildings to be occupied for military purposes, with a view of pointing out the sanitary defects, and the manner of remedying them ?—Certainly, these very duties are now required in this country from officers of health whom Mr. Martin was one great means of getting appointed. We find in regard to towns that these officers are in the highest degree useful to the public service ; and I know no reason why a town to be occupied by a part of an army should be left without the same sort of intelligent care that is bestowed upon towns in England.

6564. (*Mr. J. R. Martin.*) A town being regarded as a permanent camp ?—Nothing more.

6565. (*President.*) You would include in the education of the army medical officer all the sanitary questions connected with permanent barracks, hospitals, garrisons, &c., including drainage, water supply, cleansing, and the best means of rendering all military buildings healthy, as regards these things and ventilation ?—Certainly the whole.

6566. In short, in your opinion the medical officer should be so thoroughly conversant with all these subjects that the military officer could apply to him for advice and assistance with perfect confidence ?—Certainly ; he should be the sanitary adviser of the commanding officer, as well as his medical adviser. I hold it as a great mistake to consider that a military medical officer should be solely an officer to treat disease. His duties are far more important than that. He is brought in contact with conditions affecting health which he knows far better, or ought to know far better, than his commanding officer ; and since the preservation of the health of the army is in fact the preservation of the efficiency of the army, I consider that it is a far higher duty in a medical officer to prevent disease than to treat it.

6567. (*Mr. J. R. Martin.*) You are aware that, more than half a century ago, Dr. Robert Jackson, reviewing the health and history of the British army, declared that the enormous mortality which then existed would go on until medical officers should have that position in the council of command which was due to science ? Yes ; I have read that in Dr. Jackson's book.

6568. (*President.*) Would you extend the knowledge of the medical officer to military gymnastics, exercises, and duties, and their effect upon health ?—Yes.

6569. Should he be acquainted with the whole subject of camp diseases, and epidemics, their nature, origin, causes, management, and prevention ?—It is in the highest degree necessary.

6570. Do you consider that for sanitary purposes chemical and microscopic analysis would be advantageous ?—Yes.

6571. Should the medical officer make himself acquainted with the subject of cooking, especially as regards the preparation of hospital diets and comforts ; and also with the effects of different kinds of baths in the hygienic treatment of disease ?—Certainly.

6572. Would it in your opinion be practicable to instruct the army medical officer in these various subjects ?—Beyond all question. There are as able regimental medical officers in the British army now as can be found anywhere, but what I desiderate is, that those men should have the means of increasing their knowledge on sanitary subjects, and of making that knowledge practically useful.

6573. (*Mr. J. R. Martin.*) You are further of opinion that a medical officer should be intimately acquainted with the order of march of the troops, so as to be able to assist his commanding officer with advice as to the mode of making out the marches, in different climates and countries, with the least possible injury to the men's health ?—I think that that would be highly desirable.

6574. (*President.*) Would the benefits to be derived by the service from the course of education compensate for the cost to the country ?—Yes, upon the well-known principle that of all things the most expensive is to transgress the laws of nature ; and hygiene consists in nothing more than in studying the laws of nature with reference to health, and applying them.

6575. (*Mr. J. R. Martin.*) Has it not been demonstrated in civil life that the expense of all sanitary structural improvements is repaid over and over again even within the short life of a man ?—Yes.

6576. (*President.*) Suppose the army medical officers were educated in sanitary science, how would it be possible to make their knowledge available for the good of the service ?—If a commanding officer knew that his medical officer was not only attached to the regiment to treat the sick, but to prevent disease, and if the commanding officer knew that the medical officer was specially trained for this purpose, I cannot doubt that the commanding officer would be guided by the advice of his sanitary officer so far as military reasons would admit. The military element in an army must be supreme and responsible ; and hence the greater necessity for affording to the military element the very best means of information on all subjects affecting the physical efficiency for the force. I would give the sanitary officer the power of representing defects or giving advice, with reasons always in writing ; and copies of all such recommendations, with the replies and steps taken, should be sent to the war department.

6577. (*Mr. J. R. Martin.*) But inasmuch as it is not possible to educate the whole body of men alike in sanitary science, do not you think that a high functionary should be attached to the army, with a few subordinates, for the sanitary service of the army in time of peace as well as in war ?—My impression is, that if such a reform in education as I have mentioned were carried out, the medical officers might be very well used for this work, provided you had the sanitary element thoroughly introduced ; then you could very easily work it through your ordinary inspectors. The only question would be whether some intermediate course should not be taken till such a change be brought about, and I think it could be easily done.

6578. (*Mr. T. Alexander.*) Do you not think that there are medical officers now in the army thoroughly conversant with all subjects of hygiene ?—I found in the army, as you would naturally expect, a considerable difference in the amount of knowledge. There were some men who understood the subject or the great leading features of it, there were others who knew some of them, there were some who did not know them, and there were some who underrated them. I speak generally, for I had no opportunity of going into the subject minutely. I will give the Commissioners an illustration in point. One day we were inspecting hospitals, one of which was well ventilated, the earth was cut away from its sides, it was very clean and properly drained, and it was paved outside ; we sent for the medical officer, and told him that we highly approved of what he had done, and that we were glad to see that he had got his hospital into such a good condition. Next to that there was another hospital, where the ventilation was defective ; the earth was heaped against the walls, and there was no drainage. In that case also we sent for the medical officer, and he argued the matter with us, as to the necessity of carrying out those changes which his brother officer had already done within four yards of him. What we desire is, that the knowledge displayed by one of these officers should be extended over the whole army.

6579. (*Mr. J. R. Martin.*) Have you not found in the army, among the army medical officers, as in civil life, that the objectors to the progress of sanitary science are either persons who are old and who have

ceased to improve their knowledge, or else young men who have been idle and who have never acquired any real knowledge on the subject ?—I think you have very accurately described the classes of objectors.

6580. Furthermore, do you not think that as a matter of science the time has arrived when the cure of disease and the prevention of disease ought to be separated in the army as in civil life ?—I concur entirely in the general principle of such a separation, but I have a feeling that the army medical men are competent to do the work. I see certain objections to having separate officers. Suppose you send out a detachment with an assistant-surgeon, you could not send a sanitary officer with the detachment, and in a case like that your assistant-surgeon or whoever is in charge of it should be so conversant with the matter that he could do everything necessary ; but at the same time you should have inspecting districts including detachments, to which the inspecting officer might go and see how the other officers were doing their duty.

6581. If you had a high functionary in the sanitary department such as is contemplated, would not the knowledge now possessed by the medical officers in the army be rather enhanced through his agency ?—No doubt it would ; I think you might very well so arrange the matter that you might have a special functionary, such as you mention. At the same time the army medical officers should be left to be executive officers. It would not be safe to go in amongst them with a new class of officers. I feel that they should do their own sanitary work upon this great general principle, that not only in the army but in towns the sanitary officer should be always at hand.

6582. But the functionary which I contemplate is an army medical officer of high distinction ?—If you contemplate such an arrangement as that, it would merely be adding to the army medical department some medical officer especially conversant with sanitary measures, as the head of a sanitary department, to manage the whole matter.

6583. (*Mr. T. Alexander.*) Do you not think that you could now pick out men in the medical department of the army, who could deal with all sanitary matters as well as by bringing in civilians ?—There are some men in the army that you might send to do any sanitary work ; but what I desiderate is, that that number of men should be increased as much as possible.

6584. (*President.*) So that every army medical officer should be competent to give advice on sanitary points, and carry out his recommendations ?—Yes.

6585. (*Mr. T. Alexander.*) So that, in fact, your medical officer should be your sanitary officer ?—Yes ; and a far higher public functionary he would be than the man who merely treats diseases.

6586. (*Dr. A. Smith.*) Should there be such a regulation in the service that the military authorities should attend to the recommendations of the medical officers as to sanitary matters ?—You must have some head, some court of appeal. I have seen sufficient to know that the military element must be supreme, and must be held responsible ; but the medical officer should be so thoroughly *au fait* at the whole question, that the commanding officer should be able to know that he could give competent advice ; and I think that the commanding officer in that case would do at home what I have been told he does in India, namely, listen to the advice of his sanitary medical officer. If the medical officer were made a sanitary officer, I think there would be little difficulty in his recommendations being attended to. He should have the power of making recommendations ; and there should be a regulation that those recommendations should be considered, but I would not make it a condition that they should be acted upon. That must be left to the judgment of the commanding officer.

6587. (*Mr. J. R. Martin.*) Are you aware that in the East Indies and almost in any other country the constant neglect of the advice of the medical officers has been complained of ?—It would be a great reform as regards that, if there were some means of supporting an intelligent medical officer in the discharge of his duty ; and that might be done by requiring that copies of all his recommendations, with the reasons for them, the reply of the commanding officer, and the steps taken should be transmitted, as I have stated, to the War Department ; and by having a competent head of the sanitary department at home to advise on all such matters, and to support the medical officers in the discharge of their duty in this important matter.

6588 (*Dr. A. Smith.*) It would be necessary for the government to be more liberal in the expenditure of money as to sanitary matters, would it not ?—Beyond all question it is the worst economy in the world to save money when the object of spending it is to preserve health.

6589. Do you agree with Dr. Alison of Edinburgh —who makes this remark, that, next to the discoveries which have within the half century been made in physiology, stand those important observations which have been made in knowledge of the external causes of disease — this gentleman states that medical officers of the army took the lead in this, and that they have up to this present moment continued to do so ?—Yes ; I must take this opportunity of stating that we owe the beginnings and first lights and some of the greatest lights that we ever obtained to medical officers of the British army, and also to medical officers of the British navy. The army has furnished men of the highest intelligence, such men as Sir John Pringle and men of the same stamp ; and it is to a very considerable extent owing to the labour of these men, that the sanitary cause has taken root and flourished as it has in civil life. But it should not be forgotten that with unfettered, practical sound sense, the people of this country have of late years made great advances in the practical application of sanitary science ; while the army, which has been fettered by its position, has not made the same advances. That has been a complaint against the army. It is necessary that such improvements should be introduced as will enable the army to go along with the civilians, so that we may not be only in a civil but in a military point of view the most healthy people upon the face of the earth.

6590. (*Mr. J. R. Martin.*) You are aware that the sanitary measures established within a few years in England and Wales are but the carrying out of measures long known to the surgeons of our fleets and armies ?—Certainly. At the present time, we have about 2,000 sanitary inspectors and officers of health at work in England, in carrying out measures of this kind ; and we want the same sort of inspection done by the medical officers themselves in the army, so that every station, every barrack, every garrison, shall be kept in the same state that we contemplate our towns eventually will be kept in.

6591. (*Mr. T. Alexander.*) You would have a special report made upon the sanitary state of all barracks and hospitals once or twice a year, and which would be laid before the Minister for War ?—More than that ; I think that the occurrence of certain diseases, especially zymotic diseases, among soldiers, beyond the due proportion, should be an instant reason for making a sanitary report ; and such changes should be introduced, in the executive departments, as will secure that these reports shall yield practical results to the service.

Adjourned to Wednesday next.

Wednesday, 1st July 1857.

PRESENT:

The Right Hon. Sidney Herbert, M.P.	Sir Thomas Phillips.
Col. Sir H. K. Storks, K.C.B.	J. R. Martin, Esq., F.R.S.
Dr. Andrew Smith.	Dr. John Sutherland.
T. Alexander, Esq., C.B.	

President, The Right Honourable SIDNEY HERBERT, M.P.

Samuel Gaskell, Esq., examined.

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6592. (*President.*) You are a commissioner in lunacy?—Yes.

6593. You visited and reported, I think, formerly upon the military lunatic hospital at Yarmouth?—I visited it several times.

6594. Can you give the Commissioners generally a statement of the condition in which you found it?—Its condition was very much improved on the occasion of my last visit.

6595. Was that at the time it was under the care of Dr. Dartnell?—Yes; for a considerable time it was under the charge of several medical officers, each staying there only a short period.

6596. Being removed by roster?—By some rule of the service. We thought that a very objectionable plan, and we made a recommendation to the War Office that they should appoint a fixed medical officer; in 1852 we made that recommendation, and Dr. Dartnell was subsequently appointed.

6597. Will you state the occasion of your first visit?—I do not remember.

6598. Did you examine it first at the request of the Secretary-at-War?—I think not. It had been visited by some of the Commissioners before I was appointed, and I think it was the custom to make a visitation when that particular circuit was visited by two Commissioners. I remember my first visit was when I first went on that circuit, which would be in the spring of 1849.

6599. You state that it was very much improved by 1852?—After 1852 it improved very much. I have noted down from the reports which I drew up the different improvements, and I will state them. The system of restraint was abolished, the wire-work was removed from the windows; they had been protected before by wire-work, which made it look very offensive; the furniture was very much improved, the furniture of the officers was greatly improved; the mode of serving their meals, which had been very defective before, was very much better, and they had been provided with a quantity of books, and a number of very suitable maps were hung upon the walls, with appropriate pictures also. Then their amount of exercise was greatly extended; they were taken more frequently beyond the bounds of the small courts, a number of amusements and recreations were provided for them; workshops had been opened, and they had begun to enter upon a variety of occupations.

6600. Had they gardens?—Not much. We recommended an increased quantity of land; it is a very poor sandy land.

6601. It is very open, is it not?—Yes, very open to the sea to the east; they have very good views from the airing courts. The dress was greatly improved. They were formerly dressed according to a rule of the service in a kind of a blue hospital dress, and that was at our recommendation disused, and they were dressed in more suitable clothing. Their diet also was more varied and improved.

6602. How were they dieted before—like the soldiers in barracks with boiled meat?—I do not remember exactly; I presume it was something of that kind.

6603. You do not recollect the way in which they were fed?—I think there was a want of variety, and there was also a want of such things as knives and forks, and suitable means of serving the dinner.

6604. What is your impression of the hospital as it was left?—That it was very much improved.

6605. Was it capable of further improvement?—Yes.

6606. In what respects?—I think that the recommendations had not been fully carried out, and the quantity of land was defective.

6607. Is there the means of getting additional land there?—I believe there is, though it is of a very poor sandy quality.

6608. That would, of course, make it more easy to get?—It is very easily got, I believe; it belongs, I think, to the corporation.

6609. (*Dr. A. Smith.*) In the event of its being possible to re-establish that hospital at Yarmouth, do you consider the situation eligible for a lunatic asylum?—I think it is not bad, though it is not very eligible in some respects. Its exposure to the east is, I think, objectionable.

6610. (*President.*) As wanting sun?—It is rather cold. I think that the sun's rays come freely upon it, for there is no other building to obstruct them.

6611. The sun's rays do not come in the front entirely?—No.

6612. (*Dr. A. Smith.*) Do you think it a cheerful position for men in that state to be in?—Yes.

6613. Only having the sea, to look at?—There is always a great deal passing on the sea, and in the roads of Yarmouth a great deal of shipping.

6614. (*Mr. J. R. Martin.*) There is a variety of objects?—Yes.

6615. (*President.*) That is an advantage rather to the sailor than the soldier?—Yes.

6616. (*Dr. A. Smith.*) The country round is not that kind of country that a man with a little degree of mind remaining would like?—I do not consider it very eligible.

6617. (*President.*) It is a bleak, desolate, open, sandy beach, is it not?—Yes, but the port is near, and it is such a place as is resorted to by persons going to the sea side for the summer months.

6618. (*President.*) There is great difficulty in continually transferring men away from the place where they arrive to Yarmouth, is there not?—I think that is a very important consideration; it is very important that hospitals should be placed conveniently for the approach of invalids.

6619. As near to the port of disembarkation as you can?—Yes.

6620. Therefore, if you contemplated the re-establishment of a permanent lunatic asylum, such as we have at Yarmouth, you would recommend it to be near to Netley, where the invalids are disembarked?—I should think it preferable to be near.

6621. Have you seen the lunatic hospital, not the new one, but the old casemates at Fort Pitt ?—Yes.

6622. That may be, I suppose, disposed of by saying that it is as bad as can be for a lunatic asylum ?—Abominably bad; it is difficult to conceive of any building that could be worse.

6623. Have you seen the small new hospital where the men are received and are under observation ?—It was not open when I was there, but I have seen it.

6624. What do you wish to state upon the subject of that building ?—I thought that it was defective in ventilation.

6625. You are satisfied with the wards and the general construction, with the exception of the defective ventilation ?—Yes ; I was accompanied by Mr. Campbell, and this is our report :—"The building "is detached and two stories in height, and is calculated to accommodate between 40 and 50 patients, "with the proper officer and attendants. The rooms "are of good size, but the means of ventilation are "in our opinion insufficient. The windows do not "open sufficiently, and the only means of ventilating "the galleries is by opening the windows of the "water-closets, through which the air must pass "before reaching the interior. The building is "detached from other parts of the fort, and is situated so as to command uninterrupted views of the "river. A portion of ground has also been appropriated for the use of the patients. The premises "are still unoccupied, but we learn that the patients "will shortly be removed thither from the casemates "which they at present occupy. These wards are in "the same state as on the occasion of the Commissioners' last visit. The water-closets and dust-holes "are in an extremely offensive condition."

Those wards have continued to be occupied for about three years after our first report upon those casemates.

6626. You have seen Haslar, have you not ?—Yes.

6627. That is as efficient as any lunatic asylum can be, is it not ?—It is a very superior asylum. Of course, from its original construction, there are some defects, which it has been difficult to surmount.

6628. Did you know it before Dr. Anderson was appointed to it ?—No, I did not.

6629. You are aware that previously to his appointment it was in a very bad state ?—I have heard so.

6630. Do you know the asylum at Coton Hill ?—Yes.

6631. Is that a place where the government would have proper security for the good treatment of the officers sent there ?—Yes.

6632. Do you agree with Dr. Connolly's opinion, that so far as officers were concerned he thought that they would do better in an asylum where there was a greater mixture of classes, and where all their old associations would be broken through, than in a purely military asylum ?—I think, so far as regards association, they would be better in a mixed asylum, such as that at Coton Hill ; but I think there is something to be said in favour of their being kept connected with the soldier in a military asylum, and keeping up a kind of surveillance of the men—keeping up their old habits.

6633. You refer to the officers ?—Yes, if they could in a military asylum be induced to undertake some duty. On drill, for instance.—I think it would be useful to them.

6634. The distinction which Dr. Conolly draws is this, that with an uneducated man there is no necessity for breaking through the associations of past life, but the reverse; but that with an educated man it is an advantage ; should you be inclined to agree with that opinion ?—I am rather inclined to think that the associations of past life, during a state of insanity, are useful.

6635. But the advantage to the private of maintaining the discipline to which he has been accustomed, and which is a part of his existence, is much greater, surely, than with the officer, with whom it is only an adjunct to his existence, and does not form one of the conditions of his life ?—Still, occasionally bringing into operation the exercise of command by an officer over the men, whilst in a state of insanity, must, I think, be advantageous to him, and it must also be advantageous to the men to be submitted to that command occasionally.

6636. It would be naturally advantageous to the men, and be a great means of treating them, to maintain habits of discipline, on which to ground their treatment ; but, is it not one thing to ask the men to submit to discipline in a state of lunacy, and another thing to put power into the hand of another to command ?—All the effort made by the officer would be the effort of self-control over himself; at the same time, he would put himself in such a position as to command his men, I should imagine.

6637. Would he have the same authority over them that a sane person would have ?—No.

6638. (*Mr. J. R. Martin.*) You mean that it should be called into occasional exercise ?—Yes ; that he should be called into the occasional exercise of his former habits.

6639. (*President.*) Would the men submit to him, knowing that he was a lunatic, as they would to the command of a sane person ?—Probably not.

6640. (*Sir T. Phillips.*) For what reasons would you suggest that an officer should be placed in that position ?—I think that the occasional exercise of the function of his former position would be useful to him.

6641. That is, as treatment to himself ?—Yes, in his own case. I confine my remarks entirely to the officer.

6642. (*Mr. J. R. Martin.*) You are aware that in civil life one of the elementary measures of cure in cases of insanity is to sever the patient from all his accustomed associations and circumstances, and that is found to be an advantage ?—That is one of the first steps in the treatment, but still it is very desirable to recal the associations which have been connected with the state of sanity.

6643. (*President.*) At Haslar I apprehend there is a great advantage in the treatment of seamen in having the hospital situated on the sea, commanding the roadstead of Spithead, and enabling the men to be sent out in boats fishing ?—Yes ; there the principle to which I am alluding is, to some extent carried out ; the men perform their duties in the same way they did previously.

6644. (*Mr. J. R. Martin.*) It is found to be successful because there you have to deal with men of few and simple ideas, and devoid of education ; is not that the reason of the difference between the officer and the soldier, or the seaman ?—But they are taken out in this boat, as I understand, in the same way that they were in an ordinary boat when they were in the navy ; and my meaning is, that the bringing of them back to that state which they had been accustomed to before the attack of insanity is useful.

6645. (*Sir T. Phillips.*) Is that so with regard to naval officers as well as sailors ?—I am not fully sure of that fact, but I should imagine it to be so.

6646. (*Sir H. K. Storks.*) You mean the revival of early associations ?—Yes.

6647. (*President.*) The sailor has many very peculiar habits, and when he is in perfect health he is not much on shore, therefore the peculiarities of Haslar apply to him rather than to any other class of persons ; and there are specialties in the sailor which are treated properly at Haslar, but which do not exist in any other class of men ?—As far as regards their habits at sea it is so, and their liking for the sea.

6648. Do you think that you can argue from the value of Haslar to the seaman, that it is equally necessary that a government establishment should be created for the lunatic soldier ?—Not perhaps equally. Still I think you may form some argument upon it.

6649. You know the establishment at Bow, do you not ?—Yes.

6650. Do you think that it is safe to send the men there, taking into account their treatment and comfort ?—It is certainly safe, they are fully protected there, but they have not the advantages there which

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they had at Yarmouth. They have not the same amount of exercise.

6651. Is the space more confined?—Yes, the asylum is situated in the suburbs of London, and consequently the patients cannot get so freely out.

6652. So far as the attention paid to them, the humanity with which they are treated, and the general curative processes are concerned, are they as well off as they would be at Yarmouth?—I do not think they are. They are as well off as the imperfect accommodation will admit of.

6653. In the county asylums to which the great mass of our soldiers go, when they are sent home to their parishes, I apprehend they are as well treated as they can be?—Yes, they are.

6654. Do you know anything of the manner in which the lunatics of that class are treated in Ireland?—I do not.

6655. Nor in Scotland?—Yes.

6656. What becomes of them in Scotland—is the soldier sent home to his friends and treated as a civilian would be in that class of life?—I only know of three instances of soldiers in Scotland.

6657. The case of the soldier would not be confined to three; he is treated, I apprehend, exactly as civilian lunaties in the working class would be?—In the different asylums I presume he is. I do not call to mind the fact of seeing any soldier in an asylum. The three cases that I allude to are simply two cases that were removed into Scotland by the relieving officer, and the other the case of a man who was found to be living in a very wretched condition in a small cottage. He was found in this wretched cottage, and at our representation was afterwards removed to the workhouse.

6658. Did he remain there in the hospital?—He remained in the workhouse—in the ordinary workhouse.

6659. The treatment of pauper lunatics in Scotland is now under the consideration of the government, is it not?—A bill has been brought into the House of Commons by the Lord Advocate.

6660. What will be the effect of that bill?—The effect of that bill will be to divide the country into districts for the establishment of district asylums, and to make an arrangement with the existing chartered asylums, as they are called, and to make a legal provision for the paupers throughout the country.

6661. That will assimilate the practice very much to the county lunatic asylums in England?—Yes.

6662. When that is done there will be the same security for Scotch lunatic soldiers as for English lunatic soldiers?—Yes.

6663. Upon the whole, is it your impression that it would be advisable for the government to create a new lunatic asylum for soldiers?—It is.

6664. You are aware that at Yarmouth we did not take in all the lunatic soldiers, but merely those whose parishes or friends could not be ascertained?—Yes.

6665. You do not propose to extend it beyond what was done there?—I should be glad if it were; but speaking solely of the continuance of the present system, I think it would be very desirable to place them in a public establishment under the government.

6666. Have you the same security for the good conduct of a government establishment as for a private one?—Yes, I object very much to placing them in a private asylum.

6667. (*Sir T. Phillips.*) Take a county asylum?—That would obviate the objection.

6668. Would not it afford adequate treatment for the soldier?—Yes, I think it would, but you would have great difficulty in getting suitable arrangements made.

6669. Assuming suitable arrangements to be practicable, would not a soldier be as well taken care of in a county asylum as in any asylum provided by the government?—Perhaps he might, I should place them pretty much on the same footing.

6670. Have you any grounds of preference?—I have none.

6671. (*President.*) Practically, the soldier now, wherever his parish can be discovered, does go to the county asylum?—I am afraid not sometimes, I have no good grounds for saying so, but I fear, when they are sent home, they are placed in workhouses; I have met with them in workhouses,—recently I met with one at Manchester, since I had intimation that I should very likely be examined here.

6672. (*Sir T. Phillips.*) Was not that temporarily only?—It was the case of a man, of the name of William Healy, suffering from epileptic fits, belonging to the 11th regiment of infantry; he had served in the army 11 years and four months, in New South Wales and in America.

6673. Is that the only case you are acquainted with, at present?—That is the only case.

6674. Epileptic patients are not regarded, I believe, as persons requiring the same treatment that lunatics of a different description do?—Some epileptics require very great care in their treatment; there are others, and a very considerable number, that do not.

6675. You do not know why that person was retained in the workhouse at Manchester?—He is probably retained in the workhouse in consequence of the deficiency of obtaining accommodation in the county asylum.

6676. (*President.*) The asylum is not spacious enough?—No.

6677. That would be corrected, would it not—the magistrates would be obliged to enlarge them?—I am not sure that this was a case that would be sent to an asylum.

6678. (*Sir T. Phillips.*) I think I collect from you that your opinion is not that the patient, if admitted into the county asylum, would not be properly taken care of, but that he should not be sent to the county asylum at all?—Yes.

6679. (*President.*) Practically, is it not the custom in every parish now to send them to the county asylum?—It is.

6680. You do not attach much importance to the mixing of soldiers with other persons?—Not much; I think that there are advantages on the other side; I think I have seen such advantages at Yarmouth. I consider it very important that the action of self-control should be brought into operation in the insane; at Yarmouth I have seen remarkable instances of it; whilst on drill the patients have remained perfectly obedient and quiet, and all the mental derangement apparently suspended; but the drill being over then it manifests itself again when they are left to themselves.

6681. (*Sir T. Phillips.*) Would not other employments gradually produce the same effects upon them?—Employment has that effect on all; but in the case of those men who have been accustomed to control, I consider it an advantage to bring it into operation.

6682. (*President.*) You require considerable space, and you ought to be able to exercise them in field work?—Yes.

6683. Do not you think that there is a danger as to a government establishment which does not exist in a private house, that is, of their falling into a bad state. If a private establishment gets into a bad state it dies, whereas there is a vitality in a government establishment; good or bad, it lasts for years?—I confess that I have the feeling that a government establishment is less liable to abuse than a private one.

6684. (*Sir T. Phillips.*) A county asylum would be equally safe?—Yes; I look upon that as a public establishment of that class.

6685. (*President.*) Why do you put the county asylum so high?—A county asylum, like every other public establishment, is liable to frequent inspection.

6686. So is a private asylum?—Yes, it is, but the best inspection will sometimes not attain the end that you think desirable.

6687. (*Sir T. Phillips.*) Every system which assumes the farming out of human beings by contract must expose the person farming them to the influence of self-interest?—I think so, and on that account I

hold so strong an opinion that it is not desirable to farm out any of those people.

6688. (*Sir H. K. Storks.*) Considering that lunatic soldiers never return to the ranks, and many of them have had very short service, would it not be saddling the country with a very great expense to have an asylum solely for military lunatics ?—I doubt whether it would be more expensive than the present system.

6689. (*President.*) It would be more expensive to the state with regard to the public vote that was taken for it ?—I doubt it ; for looking at what the parishes pay, so far as they are supported by the state, I do not think it would be more expensive.

6690. Assuming that the imperial taxes and the local taxes come out of one purse, then the difference of expense, you think, is not large ?—I should be inclined to think it would be more economical to make one government establishment, because you would save the expense of the transference of the patients to different parts of the country.

6691. Your number would not be so large, therefore you would have a less number among whom to divide the establishment charges ?—I think that the number now under the charge of the state is sufficient to work an establishment economically.

6692. You are assuming the Yarmouth number ?—Yes ; I assume the number belonging to the East India Company's service also. There are now 113 men belonging to the East India Company's service in Pembroke House asylum. There are 93 of the Queen's men at Grove Hall, and at Coton Hill there are 18 officers. Then the Pembroke House return of the East India Company's officers embraces both officers and men, making a total of 224. Then in addition to this there are 14 women, making altogether now 238 in the asylums in fact.

6693. (*Sir H. K. Storks.*) Paid for by the imperial taxes ?—No, by the state.

6694. Looking at the way in which the British army is recruited, would it not be fairer when those men become lunatic that they should be sent to their parishes, to be paid for by the local tax-payers, than that they should be paid for out of the general taxation of the country ?—I am afraid that is a question which I cannot so well answer.

6695. (*President.*) Are you aware that the majority of soldiers who are lunatics are men of a very short service ?—No.

6696. A very considerable portion are under one year ; assuming that to be so, would it not be fairer that they should go back at the expense of the county in which they would have gone mad, rather than that they should be saddled upon the state ?—I think there is a fairness in that.

6697. (*Sir T. Phillips.*) Suppose that you regard the state who hires the soldier as an employer of labour might do, though the employer of labour of a different class would return the man to his parish, and he would then become an inmate of a county asylum, at the charge of his parish, why should the state be placed on a different footing as to the soldier from any other employer of labour ?—Put in that way, I should say it could not be so. If I were to argue the point, I should say that it is very desirable for every service to have suitable provision for any one attacked with illness during the continuance of that service.

6698. (*President.*) This is after service ; the man being unfit for service is discharged ?—But he is attacked whilst on service.

6699. It does not follow that it is in consequence of the service ?—No.

6700. (*Mr. J. R. Martin.*) Your objection to private asylums is grounded on the opinion that there the interest and the duties of the persons who keep them are unfavourably contrasted ?—Yes.

6701. That does not apply to a county asylum?—No.

6702. In fact they are on the same footing as a government military establishment would be ?—In that respect precisely, and free from all objection.

6703. (*President.*) Is there any other point that occurs to you which you would like to state in confirmation of your view that lunatic soldiers should be treated in a government establishment rather than in any other way ?—My own opinion is that you had a government establishment at Yarmouth. I looked upon that as a government establishment.

6704. It was lost to us during the war ?—Yes.

6705. The question is whether we should re-establish it ?—I think you should.

6706. You do not think that the disadvantages of the position at Yarmouth are sufficient to induce the government, if it re-establishes the lunatic asylum, to establish it somewhere else ?—That would depend very much upon what kind of buildings or what kind of site you would have to offer for it.

6707. Do you require a very different construction of building for a lunatic asylum to what you do for a hospital ?—Yes ; you require a great number of separate sleeping rooms. I think it is not desirable to have dormitories containing a small number, but you require a considerable number of rooms in which only one patient sleeps.

6708. What number should you say ought to be in a dormitory where the patients are fit for it ?—The numbers should be from 3 to 40 and 50.

6709. (*Mr. J. R. Martin.*) Where you would have 40 or 50, the patients would be classified ?—Yes.

6710. (*Dr. A. Smith.*) If you could have a good site for a lunatic establishment near the general hospital that is now building, possessing all the advantages necessary, that is to say, a fine view and a good healthy situation, do you think it would be desirable to incur the expense of raising that establishment rather than resorting to Yarmouth, considering that the moment the men land from the ship they could at once be removed to this lunatic asylum, instead of being taken first to one establishment and then sent away after a certain time to Yarmouth ?—I am inclined to think that it would be better to establish the one near the other.

6711. Within a mile of the hospital—would that be distance enough ?—I think so.

6712. (*President.*) Or nearer than a mile ?—I do not think that it need be removed any great distance.

6713. Do you know what is the general cost of the construction of a pauper lunatic asylum, with all its appliances, per head, taking the number of lunatics that it ought to contain ?—They have been very expensive ; they have amounted to as much as 300*l.* per head, but some that have been recently built have been built at about 160*l.*

6714. What should you say was a fair average ?—I think that for 150*l.* they might be built with all necessary requirements ; too much expense has been incurred in galleries and mere passages, and a much larger number of single rooms have been built.

6715. For 100 patients you could build one for 15,000*l.* ?—About that. There is one matter which I ought to mention, namely the increasing of the number at Grove Hall, Bow. There were 69 patients removed from Yarmouth to Grove Hall, and there are now there 93.

6716. Would not the war account for that, and the larger force, and the greater excitement to which the men have been exposed ?—Yes ; but the increase in number would also strengthen our reasons for thinking it was desirable that they should be provided for.

6717. Except that from having been increased from an accidental circumstance, the number would probably drop again ?—Yes.

6718. Do you draw any distinction between a lunatic hospital and an incurable lunatic asylum ?—A lunatic hospital, according to the legal term which we apply to it, is a public institution like the one at Coton Hill ; we have no incurable lunatic asylum.

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6719. But every lunatic hospital is to a great extent an incurable asylum?—They always have a considerable number of incurables amongst them.

6720. You are aware that it is never the practice to return a lunatic soldier to the ranks, even if cured?—I have heard so.

6721. That does not operate to shake your opinion?—It does not; my reason is, there being 238 now in asylums, and nearly all of them placed in private asylums, I think that number is sufficient for management and for economical arrangements.

6722. What you propose is, that the Government should combine with the East India Company to build an asylum?—I think it would be a very good step to do that.

6723. Is there any other point upon which you would give any opinion?—I think not.

The witness withdrew.

Captain Robert Laffan.

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Captain Robert Laffan, R.E., examined.

6724. (*President.*) How long have you held the office of deputy-inspector of fortifications?—About two years.

6725. Can you state what are the regulations connected with the duties of the engineer's department as respects the construction and repairs of hospitals and barracks, are there any specific regulations?—Yes, very voluminous regulations.

6726. That is, with regard to the scheduled prices?—With regard to the manner in which the services shall be proposed, the manner in which the plans shall be prepared, in which the estimates shall be got up, and in which they shall be submitted, and the manner in which reports shall be made to accompany them, &c., &c.

6727. Those are all, I presume, for the purpose of securing financial objects and the object of sound construction?—Yes.

6728. Do the regulations require that the engineer officer shall consult the medical officer upon any points connected with those buildings?—That he shall consult the medical officer with respect to the site and construction of hospitals, but there is not any regulation enjoining that the engineer officer shall consult a medical officer as to the site or the construction of barracks; at the same time, in warm climates, it is always usual to do so.

6729. We have had it stated in evidence that there is a good deal of difficulty and delay in the execution of repairs of hospitals, through the number of forms and the necessary correspondence between the departments. Can you state what are the steps necessary in order to obtain the execution of a repair which is found necessary by the medical officer in a hospital?—The steps are, that a medical officer shall report the repair that is wanted to the barrack-master, and that the barrack-master should make a requisition upon the commanding engineer, and the commanding engineer is bound immediately to cause it to be repaired.

6730. He sends the barrack-master first to inspect?—The barrack-master inspects the barracks constantly.

6731. And the hospitals too?—Yes; a general hospital is always under the charge of a barrack-master.

6732. (*Sir H. K. Storks.*) Suppose that it is a new work—a drain that wants making, or improved ventilation, what would be the course pursued?—If it is a new work it must be provided for either in the annual estimate or in some special estimate.

6733. (*President.*) A new work not in the shape of an addition to a hospital, but a drain or a sewer required to secure the salubrity of an existing hospital, how would that be treated?—Under our present regulations, if it was a very pressing matter involving the expenditure of only 10*l.*, 15*l.*, or 20*l.*, the commanding engineer would order it to be done on his own responsibility, reporting every three months the sums that he expended. If it was likely to entail an expenditure of 50*l.* or 60*l.* or more, then he would report the circumstance to the inspector-general of fortifications, and forward either a sketch or description in writing, so as to give the inspector-general a proper idea of what was proposed, and he would send with his report an estimate of the expense; and then if the expenditure were authorized he would proceed at once to execute the work.

6734. That is, if authorized by the Secretary of State?—For a work not exceeding 150*l.* the inspector-general, if it was thought very pressing, would not refer to the Secretary of State, but above 200*l.* he would.

6735. Within what time can an immediate repair be effected?—That question it is impossible to answer; the varying circumstances of different places and the various manners in which contracts have hitherto been drawn up are so different, that it is impossible to lay down a rule, or to name any time within which a large repair should be executed. The manner in which the Engineer department provides for repairs to existing buildings is by triennial contracts. They enter into contracts with various tradesmen for the performance of all work of an incidental nature appertaining to their respective trades. Scheduled lists are prepared, embracing every class and every description of work that can be contemplated at the time, and prices are placed opposite to them. The tradesmen tender to perform all work included in those lists that may be required during the next three years, either at the scheduled prices, or at so much per cent. above or below them, and those tenders are sent in to the office in Pall Mall, and the director-general of contracts generally accepts the lowest tender, provided the person can give proper references.

6736. Otherwise it is an open tender—anybody may tender?—Yes, it is a perfectly open competition; the lowest tender is generally accepted if the person making it can give proper references.

6737. Would it be any improvement to have a list of men to be relied upon on account of their reputation and character, rather than having it an open tender?—No; I do not think that we should gain much. By making it perfectly open we give to the contracts a greater appearance of fairness, and perhaps also we ensure that tenders shall come from every person who is competent. We might not be aware of the existence of many suitable parties, and we might, by limiting competion to a list, preclude ourselves from receiving very advantageous offers.

6738. If you accept the lowest tender you may get into bad hands, may you not?—The lowest tender is accepted if the person can give proper references.

6739. Cannot anybody do that?—No; we refer the subject to the commanding engineer on the spot, and he makes inquiries through the engineer officers and clerks of the works, and ascertains the character of the man, the amount of capital that he is supposed to have at his disposal, whether he has done any work of the kind before, either for government or for private individuals, whether that work has been well done, &c., &c.

6740. Do you think, from your experience, that you could effect the small repairs in any better way?—The manner in which tenders have been subdivided by the directions of the Board of Ordnance has been the cause of great embarrassment to the Engineer department, and they have more than once wished to have the system changed, but they have not succeeded.

6741. Do you mean one large contract taken by an eminent builder?—The Engineer department

would wish to entrust the contract for repairs of all kinds to one individual of respectability, that the same man should contract to do all the odd jobs of all trades, whether smith's work or other work, in a given district or town. We might have in some districts a dozen triennial contractors if necessary, each contracting to perform all repairs required in the town where he resided, whether the work were smith's work, or carpenter's work, or bricklayer's work, or plumber's work, or painter's and glazier's work, and so on; we should then be able to get work executed with far greater expedition. At present the contract for smith's work is in one hand, and the contract for mason's work is in another, for bricklayer's work in a third, for painter's and glazier's work in a fourth, for other work in a fifth, and for other work in a sixth. And the consequence is, that if a window in a cavalry stables is broken the commanding engineer has to send a requisition to the carpenter to repair the sash, to the painter and glazier to paint and glaze it, to the smith to come and take off the fastenings and put on new ones, and to the bricklayer to come and fix them in the wall.

6742. Unless you can secure the fortuitous concourse of those four people at once, the job remains undone?—Yes; for the carpenter comes and finds that the smith has not taken off the fastenings, and the painter and glazier puts himself to great trouble to come and put the glass in, and he finds that the carpenter has not mended the sash.

6743. You would put it under a builder to execute it all?—Yes; we must let the present contracts run out, but then I shall propose to entrust the whole work to one hand.

6744. Is it wise to have a contract for so long a time as a triennial contract, considering the rise and fall in the price of materials during that time?—It opens the door to our paying sometimes too much or too little for certain work; but I think on the whole that the triennial period is a good one.

6745. If a medical officer should require the walls of his hospital limewashed, or a water-closet has become stopped, within what time would that work be done?—In the case of limewashing the barrack master has authority to do that immediately, without referring to any one. With regard to the other, it would depend upon the nature of the work and the number of trades concerned in repairing it.

6746. The other day I saw at Chatham some water-closets shut up and marked "for repair," and I was told that they would probably be done in a few days, whereas the work could have been done by a man in the town in the course of a morning—does that occur sometimes?—I daresay it does.

6747. There is a sum voted annually for the repair of each hospital, and though included in the gross the whole item is formed of a number of small items—is not that so?—Yes, incidental items.

6748. Could not the principal medical officer be empowered within a certain amount of cost to send for tradesmen and execute the work at once?—If you made it a rule that the medical officer should be responsible for all incidental repairs, I daresay you would find that answer. It might cost a little more, but you would get the work more quickly done.

6749. In anything of importance he could have the advice of the engineer officer, as to whether the contract was a fair one?—Yes, you would possibly ensure greater rapidity in the execution of the work, but then you would have to relieve the engineer officer from the responsibility of the incidental repairs entirely, for it would not do to have two parties responsible for the same thing.

6750. If the engineer officer were called in, without going through any ceremony, but by immediate communication to the engineer officer, and if it were stated to him that such and such things were wanted, and there was an offer to do them for so much, and he came to see whether it was a fair sum or not, that would secure the public as to the propriety of the contract, would it not?—It would secure the public as to the propriety of the contract, but not with regard to the efficiency of the work, as it would be necessary that the same man who reported upon the reasonableness or otherwise of the contract, should also examine whether it had been properly executed. A tradesman might tender to do the work efficiently for 100*l.*, but he might do it at a cost of 30*l.* or 40*l.* in a very slovenly way.

6751. You would require the overlooking of some person competent to decide whether the work was well done, as well as whether the contract was fair?—Yes, in every case you would require a professional opinion.

6752. Have you ever contemplated executing small works, such as carpentering repairs, by means of a house carpenter belonging to the establishment?—I have often thought of it, both as to hospitals and barracks.

6753. I believe it is done so in the prisons, is it not?—I am not aware.

6754. Even in large private houses they find their account in keeping a man as a house carpenter?—Yes. If I had a large private house I think I should follow that plan, but I am not sure that I should recommend the government to follow it. The owner of a private house has an individual interest in seeing that this man is not idle, and if he is not there his steward is there to keep the man employed; whereas, if the government attaches permanent workmen to their great establishments, you would have to constitute some authority to see that the men were properly employed, and did their work well. And I think, seeing the abuses that that system would be open to, it is better to adhere to the present one.

6755. Do not you think that there would be quite sufficient employment in a large barracks or a large hospital for a permanent carpenter, while other tradesmen might not find anything to do?—It is possible that in a very large building there may be always something to do, sometimes in one trade, sometimes in another, but it does not follow that a carpenter should be always sure of employment.

6756. You have a great many articles made up by carpenters, such as bed-shelves and bed-tables, which are made by contract, and which a man could be always at work on, making up when he was not employed on repairs?—Yes; I think if you could provide for the constant supervision of the man, it would be a good system, but I do not see the means of doing it.

6757. Do you think that the purveyor who is in charge of the material part of the hospital could not do that?—Unless he were a carpenter himself, or had a foreman under him, I do not think he would be able to do it.

6758. Who is present when a tradesman is at work in a hospital?—The tradesman receives his orders in writing, giving him a detailed description of what he is to do, and he executes the work, and during the progress of it the foreman, an officer of the engineer's department, visits the work once or twice a day to see that the work is well done, and after it has been done it is examined minutely and measured.

6759. Therefore, generally speaking, you would say that you have greater confidence in the contract system, for very small jobs, than in the employment of an artificer under the government;—Yes, I think so; I do not think that you could find, even in the largest establishment, permanent employment for an artificer.

6760. It is more difficult, is it not, to assess the cost of repairs than the cost of new work, in order to make a contract?—Large repairs are hardly ever done by contract.

6761. Are they not done by those triennial contracts?—Yes; but if a repair is likely to cost 300*l.* or 400*l.*, it is then made a matter of special estimate and special contract.

6762. Is it not difficult to measure small jobs of that kind, and to say exactly the value of them; I mean that the job may be very small and the charge may be very small, and yet be very large as compared

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with the job done ?—A professional man can measure with the greatest accuracy the amount of material and the amount of labour required to execute any repair.

6763. Works done by the Engineer department are supposed to be more solid and durable, are they not, than those done by contract ?—I am not aware of that. I think works done by contract, under proper supervision, are quite equal to anything that we do ourselves.

6764. Is there any truth in the supposition that the work done by the engineers is dearer ?—If you add to the cost of the work done by the engineers the expense of having an engineer corps, and the pay of the men and officers, you would probably find that the work would have been done more cheaply if you could have dispensed with that body. The light in which you should look at it is this—you have these men, and you must have them, if you intend to be a military nation : and having them, it is expedient to give them employment.

6765. Do you think that contracts made under the Engineer department are higher than when they are made directly with the contractor without the intervention of the Engineer department ?—Contracts are never made by the Engineer department : they are always made by the director-general of contracts. The Engineer department prepare the plans and estimates and reports, and submit them to the proper authorities, either the Secretary-of-State or some other authority, and after they have been approved and money has been voted, the Engineer department advertise for tenders calling for unlimited competition, calling on all persons to tender for the work, and stating that every party wishing for information may call at the engineer's office and see their plans and specifications and reports, and the nature of the work to be done; and then the tenders for the execution of the work are addressed, not to the Engineer department, but to the director-general of contracts in Pall-mall.

6766. You never make a contract as they do in civil life for the whole building, you always make contracts in pieces ?—No, that is quite an exception. The general plan is to make a contract for the whole building, without reference to the price of materials. It is simply who shall tender to do the work according to the plans, at the lowest price.

6767. Leaving the questions of measurement and cost of materials, and his prices, to the contractor ?—Yes.

6768. Is that better than dealing entirely by measurement ?—Incomparably better.

6769. (*Sir H. K. Storks.*) With regard to the repairs at out-stations, do they come under the triennial contracts ?—If they are small they do ; if they are large and exceed 300*l.*, then there is a special contract in that out-station. We enter into no account with the contractor as to the quantity and the prices of labour, we simply give the contract to the man who gives us proper references and tenders at the lowest price.

6770. (*President.*) In the instruction of engineers, is there much space given to questions of civil engineering. I mean does their education comprise questions of sanitary engineering ?—Architecture is one of the chief elements of the education of a military engineer, but civil engineering has not been very much taught.

6771. Is sanitary engineering attended to ?—I hardly know what that means.

6772. Questions of drainage, sewerage, and ventilation ?—I should think that ventilation has been very little considered by anybody in England up to the present time.

6773. (*Mr. J. R. Martin.*) There is no standard principle established ?—No ; ventilation is not an exact science.

6774. (*President.*) You have no regulations upon the subject, but you state that the practice is, in the case of a hospital, to take the opinion of the medical officer as to the site, but with regard to barracks that is not so ?—Except in warm climates.

6775. Does this reference to the medical officer go to such questions as the soil, the sub-soil, and the water supply ?—We ask the medical officer to say whether it is a proper site or not. It is for him to consider what subjects to take into account. The chief points that you direct attention to in judging of a site are, the general healthiness of the situation, the facilities of drainage, the means of coming to the place and of getting away from it, and the supply of water.

6776. (*Mr. T. Alexander.*) With regard to the amount of space for each patient in hospital, and for each soldier in barracks, who decides that ?—We have regulations upon the subject. I really do not know whether the medical department was consulted when the regulations were drawn up, I presume they were ; but the regulations as laid down define the number of cubic feet.

6777. (*President.*) You have some barracks with larger cubical contents to the men than there are in the hospital of the same station for patients, have you not ?—As we go on improving it is possible that the barrack of the present day may exceed the hospital of the last century.

6778. Is it ever the case that the men have more space in a barrack than in the ward of a hospital ?—I do not remember a case of that kind.

6779. Was any medical opinion taken in building the new hospital at Winchester?—Yes. Two medical reports were made upon it, and I am sorry to say that they were diametrically opposed to one another.

6780. What was the nature of the reports ?—One was favourable, and the other unfavourable to the site.

6781. Therefore, under those circumstances, you followed your own judgment ?—We endeavoured by every means to get another site. We examined the place in every direction, and finding in the end that we could not get a better site at anything like a reasonable cost, we built the hospital on the present site.

6782. (*Dr. A. Smith.*) What was the cost that was required to buy the site that was considered by everybody more desirable?—£3,238.

6783. (*Sir H. K. Storks.*) Would the new site have been concurred in by all the medical officers, or would those who were in favour of the old site have condemned the new one?—I cannot tell.

6784. It was not submitted to them?—No.

6785. (*Dr. A. Smith.*) Which board was it that condemned the original site. Was it the first or the second board?—It was the second.

6786. Do you recollect whether it was not the first medical board that reported the site to be an eligible one ; upon the understanding that there was no other site to be obtained, and that I went down then, and being of opinion that the site was completely objectionable, I raised the question, and a second board was then appointed in order to see whether a better site could not be procured, and they found the site to be incligible, and condemned it?—I really cannot tell you.

6787. (*Mr. J. R. Martin.*) If a medical officer were attached to one of the departments, the engineer's or the quartermaster-general's department, in the sanitary line of his profession, as a medical topographer, a man of scientific acquirements and station, would not that be more desirable with reference to the subject of your examination than a casual reference to medical boards ?—I think that an officer who held that position would find himself in a very embarrassing situation because the proper officer to refer to is the director-general of the Army Medical Department. When the inspector-general, or the Secretary-at-State, wishes to know what would be a proper site for a hospital or barrack, or wishes for any other information, he refers to the director-general of the Army Medical Department, and it is for the Army Medical Department then to take proper steps to get the best medical opinions on the subject.

6788. (*President.*) The director-general does not go himself to see every site, he deputes somebody else to do that ?—Yes ; all that I should contend for is, that if there is to be some one officer who is to report on all those questions, he should be attached to the staff of the Army Medical Department, and not to the staff of the inspector-general of fortifications. On the other hand, there are a vast variety of questions constantly arising which require the opinion of a medical officer, and one medical officer may be an experienced man, and able to give an opinion of very great value on one question, and yet not be experienced on another, and I think it would be better to leave it to the discretion of the director-general of the Army Medical Department, to select a fit officer for each individual case.

6789. As these are questions of great importance, would it not be an advantage that there should be one person charged by the director-general of the Army Medical Department to direct his attention solely to them ?—That is a matter I can hardly give an opinion upon. I think the director-general would give a better opinion upon that.

6790. (*Sir H. K. Storks.*) With an army in the field would it not be very advisable to have a medical officer whose duty it should be to report on encampments and sites for encampments ?—I presume that in the field, if it can be done, the opinion of the medical officer is always obtained before a site is selected.

6791. (*Mr. J. R. Martin.*) You are aware that in civil life, officers of health have been appointed in great cities ?—Yes.

6792. Apart from the treatment of disease, whose attention is devoted exclusively to sanitary science ?—I can quite understand that in certain fixed localities that may be desirable, but I do not think you could have in one man's head all the local circumstances connected with all the sites in England.

6793. But a medical topographer implies a person who is well versed and conversant with the influence of locality in all climates, and a man especially devoted to that science?—I have no doubt that it would be an advantage to have attached to the staff of the director-general of the Army Medical Department an officer who made such questions his special study.

6794. (*President.*) You were not in office when the Portsmouth hospital was built ?—No, I was not.

6795. You do not, therefore, know whether the medical officers were consulted in that instance as to the site ?—No.

6796. Have you brought with you the plans of Netley hospital ?—Yes.

6797. Can you state how the choice of the site was made there ?—In this way : Lord Panmure told the inspector-general of fortifications that he wished an officer of engineers to be sent to him, to advise him as to the choice of a site for a hospital ; I was not then connected with the War Department, and Sir John Burgoyne wrote to me, and by his direction I waited upon Lord Panmure, and he told me that he wished to establish and the government intended to establish a large military hospital capable of containing 1,000 patients or upwards, and he was very anxious to select the best site for it. He stated that he considered a hospital would be best situated in the immediate vicinity of the sea, so that invalids coming from warm climates, sick or wounded men coming from any war, should be sent from the ships to the hospital at once with the least possible jolting and delay ; and he considered that it would be another great advantage if that hospital could be situated in the immediate vicinity of some of our great naval stations, so that the steamers coming in and out could carry out the service of conveying those men to the hospital. He sent me to examine the neighbourhood of Portsmouth, but before starting I waited, by his lordship's directions, upon the director-general of the Army Medical Department, and stated to him Lord Panmure's wishes, and also his desire that the director-general should appoint a medical officer to go with me to report upon the sanitary condition of any site we might select ; the director-general appointed Dr. Mapleton, and he and I went down to Portsmouth, and after having examined the whole of the country there we came back, and reported to Lord Panmure that the best site we could find was in the neighbourhood of Haslar, between Haslar and Fort Monckton, but that it was not a very good one ; we described the advantages and disadvantages of the site.

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6798. There being marshy ground at the back ?—Not exactly so, there was a salt water tidal creek, one of the inlets of the harbour. Some time afterwards Lord Panmure was informed that the neighbourhood of Porchester Castle would be better, and Dr. Mapleton went down to Porchester Castle with Sir Frederick Smith, but they reported unfavourably of the site, and about two months after that Lord Panmure sent for me, and told me that Sir James Clark had been urging very grave objections to the site at Haslar, and stated that a much better site could be found on the eastern shore of Southampton water. Lord Panmure told me to call upon Sir James Clark, and to examine and report upon any site that Sir James Clark might point out. I did so, and the director-general of the Army Medical Department appointed Dr. Mapleton to go down with me. When I called upon Sir James Clark, he stated that Haslar was objectionable from the vicinity to the existing general hospital, and as being unfavourable to the health of patients coming from warm climates ; and he said that he had been often struck by the fine position of the ground sloping down to the shore near Netley, and suggested that I should go and examine and report upon it. He gave me a report from the director of the geological survey of Great Britain, upon the geological features of that part of the country, which was very favourable, stating that the whole of the country there was one mass of gravel, and Sir James Clark gave me a copy of the map of Hampshire, upon which he had marked the spot that he wished us to examine. Dr. Mapleton and I went down to examine it, and we reported that it seemed to us well adapted to form a site of a great hospital ; Dr. Mapleton then went to the director-general of the Army Medical Department, and told him the result of our inspection, and pointed out to him that it was a good site in every respect ; that there was a large extent of mud opposite to the site, uncovered at low water ; but that from inquiries that we made on the spot, we thought the existence of that mud would not be a source of inconvenience or danger.

6799. Is it not a matter of fact that the mud is rather saving of health by keeping the sea from the peat bed below ?—I can hardly answer that question.

6800. It is stated that the mud, if undisturbed, acts as a preventive against the bad consequences of the salt water reaching the peat ?—I do not know what bad consequences would follow ; I can only say when we examined it in May 1855, and we examined it both at high and low water and at all times ; we did not perceive any inconvenience arising from it ; there was no offensive smell then, and the people living on board the preventive ship, which is fixed in the mud, men, women, and children, all seemed the very pictures of health. They had been there for three or four years, and we thought if those people felt no inconvenience from it, the inmates of the great hospital, the foundation of which would be 40 feet above it, and would be removed 200 or 300 yards away from it, would not suffer.

6801. Is the mud covered at every tide ?—Yes. With regard to the site after we had reported upon it to Lord Panmure, he did not immediately make up his mind that it was a good site, he caused two other sites to be examined by Dr. Mapleton and Captain Ross, Hurstmonceaux in Sussex, and Appledercombe in the Isle of Wight, and it was only after that in the

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month of August 1855, that he caused negotiations to be entered into, for purchasing a site at Netley.

6802. Sir James Clark only indicated a site as one that deserved examination?—He expressed a very favourable opinion of it.

6803. The medical opinion that was taken of the site was that of Dr. Mapleton?—Yes, Dr. Mapleton reported the result of his inspection to Dr. Smith, and I understood from Dr. Smith, that he went down immediately and examined the site, and reported to Lord Panmure upon it, stating that he thought it a desirable one.

6804. With regard to the plans, were those submitted to the medical officer, or were they drawn up upon any specification of what the medical officer thought best adapted for hospital purposes?—Lord Panmure appointed a committee to prepare an outlined plan of the hospital, the committee consisting of Colonel O'Brien assistant quarter-master general, who, we were informed at the Horse Guards, had given great attention to hospital construction, of Dr. Mapleton, and of myself. Lord Panmure instructed the committee to place themselves in communication with the director-general of the army medical department, and to act upon his suggestions; and the Committee, during the preparation of these plans, was in daily communication with the director-general, through Dr. Mapleton, and they adopted every suggestion that was made by the director-general.

6805. You only carried out, as an architect, the plans which were approved of on sanitary grounds by the medical officer?—My portion of the labour of the committee was simply in seeing that no architectural blunder was committed, it was not for me to say whether the wards were to be large, or small; the building was to be built for the use of the medical department, and it was for them to say what they wanted, and for me to adopt those architectural measures which were necessary to carry out their requirements.

6806. It was not specified to you that it was necessary, or advantageous, that the windows of the wards should face the sun?—That was a subject which occupied the attention of the committee very much, and Lord Panmure, in conversation with me, told me that he was of opinion that a great hospital, such as Netley, should be divided into a number of separate blocks, and that those blocks should be separated from one another by considerable intervals, but to be connected together by one good gallery of communication. When the committee met, it was a question, whether we should recommend that system of construction which is generally known as the French system of construction, or to mass the wards together. That was the first question that was discussed before the committee, and it appeared to the committee, that the question depended greatly on the number of patients that might be placed in one ward; the separate block system requires that each floor of each block should form one great ward.

6807. Not necessarily?—Yes, I think it does follow of necessity.

6808. The French hospitals are divided in the centre by a staircase and a lobby, dividing the block into two wards?—That is the plan adopted at Vincennes, but the result of that is, after having passed from one block to another through the great gallery of communication, you have to pass through the whole length of one ward before you reach another, so that one ward is merely a passage to reach another by.

6809. Unless you start from the floor below?—Then you have to make one ward a passage.

6810. No, for you may have external communications?—Then you do away with the advantage of the covered gallery.

6811. Do you attach any importance to the question of getting sun into a ward?—Yes, great importance, and I was decidedly in favour of the separate block system, provided I were permitted to place in a ward such a number as 24 or 30; we might have divided Netley hospital into 10 blocks, but not into 20 or 30, as the covered gallery would then be of enormous length, and the expense would be so enormous, and the number of attendants would be so much increased; we therefore endeavoured to calculate how many blocks we could do with, and taking it at 10 for 100 patients each, and dividing those 100 into three floors, that gave us 33 on a floor. If we had followed the ordinary French plan of having a large ward for 30, and a small room for two or three near the staircase, we could have carried that out on that plan; but on referring to the army medical department, we found the director-general decidedly opposed to it, and all the military surgeons that we consulted were decidedly opposed to it, and all the military men we consulted were decidedly opposed to it, because they thought it would be impossible to maintain discipline in such wards.

6812. What are to be the numbers in the wards?—The numbers vary. The general number is 9; the minimum cubical space allowed to each patient is 1,400 cubic feet.

6813. Is it not more difficult to maintain discipline in a number of small wards containing 9, than in wards containing 50?—I have only been quoting the opinions of others, not my own.

6814. You made an alteration and adopted the present system in consequence of the necessity of making the wards so small as to hold only 9?—Yes.

6815. In your construction you have sacrificed, have you not, the question of the sun altogether, your only windows are to the north-east?—We had windows opening into the corridor always; we had doors and windows to each ward; in the original plans they had a door and two windows opening into the corridor.

6816. Do those windows open now down to the ground?—No, but down to within 20 inches of the ground.

6817. You can wheel a bed out through the door? Yes.

6818. Are these French windows, or how do they open?—They are French windows.

6819. Can you open the upper part without opening the lower part, so as to screen the men from a draft?—Decidedly, we can throw back the top part.

6820. Still the sunlight would be a good deal intercepted by the piers?—Yes, if the original plan had been followed; but it has been proposed by a committee since to extend those openings.

6821. Have you not substituted a third window here (*pointing to the plan*)?—Yes, one tripartite window in place of those two (*pointing to the plan*).

6822. Would it not be better to have them made separate, so as more to diffuse the light?—Medical men think that it is not desirable to throw the light on to the patient, but that it is desirable to throw it into the centre of the room.

6823. You have now got, have you not, as much sun into the ward as you can have consistently with the existence of the corridor?—All the sun that would come in if there was no corridor, less simply that which is cut off by the columns.

6824. And by the floor of the rooms?—Yes.

6825. It is like a verandah, is it not?—Yes.

6826. Was it not represented to you that the presence of the sun has a very important effect upon the atmosphere of a hospital ward in making it more salubrious?—No, it was not.

6827. Nor that great light is very advantageous for a hospital?—We had so many different reports, that I really can scarcely repeat them. The officer who was sent to Rotterdam to get a design from what Dr. Smith considered the best hospital in Europe, came back and said that the whole of the Dutch doctors were decidedly opposed to the separate block system on account of the strong light that was thrown in from the opposite windows, producing ophthalmia.

6828. Is there any difficulty in excluding light by means of blinds and shutters when you have too much light?—You may exclude sun light.

6829. (*Mr. J. R. Martin.*) Do you apprehend that in this climate light, during any long period, proves offensive to the inmates?—Decidedly. I should say that a large building, sheltered from the northward and eastward, facing the south-west, with an afternoon sun shining full upon it, would be like a hothouse, and the site at Netley has been selected on account of its being sheltered from the northward and eastward, and open to the south-west, and, on a summer afternoon, the sun will strike full upon the front of the building; I am not sure that the advantage gained by opening the corridor will not be counterbalanced by the action of the sun on an immense extent of glass.

6830. (*President.*) Do you supply shutters or venetian blinds to the windows?—Every means and appliance of that kind that may be demanded by the medical department will be immediately fixed.

6831. You do not think that there is any danger from the ward being placed in close proximity with, and joined to, the corridor, supposing that closed, and disease being communicated from one ward to another?—I think that you can ventilate a close corridor sufficiently to prevent anything of the kind.

6832. What is the mode of ventilation that you propose to use in the hospital?—The mode of ventilation that I propose to use in this hospital is, doors and windows, and an open fireplace, that is the ordinary means of natural ventilation. We give to each ward a most unusual extent of window surface and door surface, and we give to every ward an open fireplace, and, in ordinary times, that would be sufficient for the ventilation of the hospital; but as there may be seasons when it might be inexpedient to open the doors and windows, I propose to carry up through the walls of the wards ventilating shafts, or ventilating flues, to take away the vitiated air from the wards, and to have openings in those vitiated air flues closed by sliding panels, or grated openings, so that you might stop them up entirely, or open them to a partial extent, or entirely, as you found it necessary.

6833. So that you could have recourse to artificial ventilation if the natural ventilation was found insufficient?—Yes.

6834. (*Mr. T. Alexander.*) Have you any openings for fresh air with the exception of the doors and windows?—Yes, we shall have channels through which the outer air may reach the rooms, but the manner in which that air shall be conveyed into the rooms we have not yet quite fixed upon. It appears to us expedient that we should not introduce that air, as is usually done, through a vacant space round the skirting, because we think that would cause a draft along the floor, so that a man getting up and walking about would have a cold current of air striking his feet.

6835. Could you not remedy that by admitting air from the lobby?—We do not want to do that, we wish to keep the wards perfectly independent of the corridors.

6836. (*President.*) Do not you admit of cross ventilation?—You might have it if you wished, by opening the windows, and I presume that would be done in the summer, when the corridors would be open.

6837. (*Mr. J. R. Martin.*) What means of escape for the consumed air will you have?—The fire places and the air flues in the wall; there is an opening at the floor which you may open to carry away the vitiated air, and you may shut that and open another near the ceiling; and you may thus carry off the vitiated air either from the bottom or the top.

6838. (*President.*) You would trust to the corridor for the admission of air?—I think it is better not to trust to that. I think it is better to introduce any air from the free outer air than from the corridor.

6839. But in the summer time it will be the same in the corridor?—Yes.

6840. If you wanted warm air in winter, I suppose you would get it then through the corridor by heating the corridor by stoves, and introducing the warm air from the corridor into the wards?—I should not recommend that system, I would take the air from the outside where it is perfectly pure, and carry it at once into the wards, warming it, if necessary.

6841. Will the air coming in fall on one side only, suppose the wind sets the other way for example?—I think it would, but there is no necessity for confining the supply of air to one side, you may have air coming in from both sides; I would not have it come in through the corridor, but I would carry the supply pipe under the floor of the corridor to the open air beyond.

6842. Have you made any new arrangement as to the end wards, which have a borrowed light in them, since the first plan?—I think that is improved.

6843. And in the same way with regard to the wards in the two projecting wings which face the water, those have been enlarged, have they not, by removing some of the water-closets?—We had a double set of water-closets, but one is said to be enough.

6844. Those wards would be very well lighted?—Very well lighted.

6845. A new arrangement has been made for putting the water-closets in other parts of the building projecting beyond the face of the whole building?—The buildings always projected, and they project now a little more than they did.

6846. Does the division between the lobby and the water-closets reach the whole height of the ceiling, or is it merely a bulk-head?—The division between the lobby and the ward is complete.

6847. And between the lobby and the water-closets?—That is complete also.

6848. Up to the ceiling?—Yes, it was different before, but that was rectified upon the suggestion of Miss Nightingale.

6849. So that all communications with the water-closets will be cut off?—Completely.

6850. What sewer is it proposed to construct to pass under the hospital?—The construction that we thought it best to adopt was to carry one great sewer from the north-west corner of the hospital along the whole of the back of the hospital, and beyond it, and out into the sea below low-water mark.

6851. So that it does not pass under the building, but it goes round it?—It passes behind the hospital, goes a good way beyond it, and then turns towards the sea, and runs into it below low-water mark.

6852. Is there any advantage in having a very large sewer; is not sewerage more complete if the interior surface of the drain is thoroughly scoured?—It has, I think, this advantage, that if an obstruction takes place you may send a man in to remove it.

6853. Will this sewer be ventilated at a distance from the hospital, that is, trapped?—I do not think we shall find it necessary to have any ventilating openings in the great main sewer; it empties itself below low-water mark, the distance is not very great.

6854. But the gases which are generated are kept in by the water at the end of the sewer?—Yes; at the upper end we shall erect a chimney to carry off the effluvia.

6855. (*Mr. J. R. Martin.*) The lesser drains falling into the great sewer would be trapped twice over I suppose?—Yes, we should take the greatest pains to trap them properly.

6856. (*Dr. Sutherland.*) Have you calculated how many acres of ground that large sewer at Netley will drain, or what amount of population it will serve for?—I really have not. The only pains I took was to make it larger than any probable requirement would necessitate.

6857. I have seen that sewer, and with the fall it has it would drain a town of 30,000 inhabitants?—We thought it better to be on the safe side; with small pipes, if the pipes get choked, you do not know where the choking takes place.

6858. (*Dr. A. Smith.*) With reference to the large drain, what internal form do you mean to give it?—It

Captain Robert Laffan.

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is built of an oval shape, egg shaped, with the narrow part downwards.

6859. Do you contemplate, as there are to be other buildings behind it, that the sewerage from those other buildings shall be carried into the principal drain, or do you contemplate that a separate large drain shall be constructed for each building ?—No ; I contemplate that the sewerage from the government buildings should all go into this main sewer.

6860. For instance the barrack for invalids, and the lunatic asylum which will be behind?—The main sewer, as it is arranged, will take the drainage of all the government land or buildings.

6861. (*President.*) Do you propose to have a separate laundry ?—That depends upon Parliament.

6862. How do you propose that the washing shall be done ?—We intend to propose to Parliament to grant us money to build a laundry.

6863. (*Sir T. Phillips.*) How did you intend to have the washing done ?—We proposed a vote for the hospital, intending to propose another vote for the laundry ; we always contemplated a laundry.

6864. (*President.*) Are the orderlies to sleep in small rooms adjacent to the wards ?—No, I do not think that anybody but the patients ought to sleep in the hospital ; that is provided for, and we propose to put the orderlies into a small building in the yard.

6865. Have you any accommodation for female nurses ?—Yes, in a floor of the central building. We give them up a complete floor in the central building, and they have very good accommodation.

6866. (*Dr. A. Smith.*) Do you not contemplate that there shall be any orderlies in the wards at night ?—The administration of the hospital is not my province, and if it were I should order that nobody but the patients should ever sleep there ; the orderlies on duty should remain awake, and those who were not should sleep elsewhere.

6867. (*Sir T. Phillips.*) Is there to be no current of air in the wards ?—I do not see how ventilation, particularly by natural means, can be effected by any means without a current of air.

6868. How would it be admitted ?—From the free outer air, and the channel of communication will be carried under the floor, communicating with the free outer air on both sides of the hospital, and terminating in the centre of the room.

6869. Besides the doors and windows, you will introduce air at the bottom of the floor into some central pipe or tube, from which it is to escape into the rooms ?—Yes.

6870. All these means will supply air of the temperature of the outer air ?—Yes.

6871. Are there any means whereby the air can be at all tempered, with reference to the state of the atmosphere and the weather ?—There are many means ; you might make the tube pass round the fireplace, so that whenever you lighted a fire you would have warm air, and whenever you had no fire you would have cold air ; that would not apply to the air that came in through the windows, undoubtedly.

6872. What is the elevation of the building—the basement of it—with reference to high-water mark ?—The floor of the wards, on the ground floor, is about 38 feet above high-water mark.

6873. What is the foreshore there?—The foreshore, for about 50 yards, is pure shingle, and then you come upon a layer of mud and sand mixed, and then you get into pure mud.

6874. Is it much exposed to the action of heat, at low water, for a considerable space ?—Yes ; for about six or eight hundred yards.

6875. How far are you from the sea?—Some miles ; we are within about five miles of Southampton.

6876. I suppose the mud is exposed daily for eight hours out of the 24 ?—Yes.

The witness withdrew.

Adjourned to Friday next at One o'clock.

Friday, 3rd July 1857.

PRESENT :

The Right Hon. Sidney Herbert, M.P.	Sir Thomas Phillips.
A. S. Stafford, Esq., M.P.	Sir James Clark, Bart.
Col. Sir H. K. Storks, K.C.B.	J. R. Martin, Esq., F.R.S.
Dr. Andrew Smith.	Dr. John Sutherland.
T. Alexander, Esq., C.B.	

President, the Right Honourable SIDNEY HERBERT, M.P.

James Bird, Esq., examined.

J. Bird, Esq.

3 July 1857.

6877. (*Dr. A. Smith.*) With reference to several communications which you have made to me, have you brought the apparatus which you propose for the purpose of introducing fresh air into rooms or hospitals ?—I have.

6878. Will you be kind enough to explain it to the Commissioners ? Have you got a model here ?—No ; but the plan, I think, will explain the whole thing (*handing in the same*).

6879. How does it work ?—By means of a brick introduced into the wall, whereby the external air comes in horizontally and is carried into the dwelling vertically instead of horizontally.

6880. What carries it on ?—This may be placed half way up the wall, communicating either with an opening directly through the wall, or with an air-channel.

6881. This is a section of a wall, the brick going right across it ?—This is the brick itself. The line here (*pointing to the plan*) would represent the external wall. I will read to the Commissioners a description of the "Vertical Air Brick." "The purpose of "utility, for which the vertical air-brick is intended, "is for the free admission of the external air into "dwelling-houses or other buildings, with a view to "the improvement of their sanitary condition. The "design is for a hollow air-brick, having an opening "at one end to admit the entrance of the external air, "as shown in figure 2 on the plan, with a second "opening on top surface, as shown in the same figure, "for the discharge of the said external air into the "room vertically. The vertical air-brick may be "inserted into the wall as a bracket, or be placed on a "level with the floor line, communicating in either "case with the external air, and permitting of its "being conveyed into the apartment vertically and "above the head line, thus avoiding all risk from "horizontal draughts, &c. The vertical air-brick is "noiseless, self-acting, cleanly, and economical. It is "so cheap as to be applicable to the smallest cottage "dwelling, to workshops, factories, hospitals, schools, "or barracks, while it admits of the highest degree of "ornament to render it suitable for the mansions of "the wealthy."

The witness withdrew.

GEORGE BORLASE CHILDS, Esq., examined.

G. B. Childs, Esq.

3 July 1857.

6882. (*President.*) What position do you hold with respect to the City police force?—I have the sole charge of the medical department.

6883. What is the strength of the City police force?—567.

6884. What has been the number of candidates for admission?—260.

6885. How many years have you taken?—I have taken the year 1856; the full complement is 588.

6886. What was the number admitted?—104.

6887. What number were rejected out of the candidates?—Before the men come before me they are examined by the commissioner as to moral character, and I find that the commissioner rejected in that year 90, and there were rejected by the surgeon from physical causes 40.

6888. What number of men were dismissed in the course of the year?—21; and 36 resigned at their own desire.

6889. How many resigned on account of bad health?—12.

6890. And how many resigned on reports made against them?—13.

6891. That is they are allowed to resign when there is some charge made against them?—Yes.

6892. How many resigned or were rejected on probation?—12.

6893. For what reason?—Either from caprice on their part or from incapacity.

6894. What number retired on pensions?—Three.

6895. How many deaths were there?—Three.

6896. What was the minimum age on admission?—Twenty one years.

6897. And the maximum?—32.

6898. What was the average age of the men admitted in 1856?—25·72.

6899. What is the minimum height of the men?—Five feet 8 inches.

6900. And the average height?—Five feet $9\frac{3}{8}$.

6901. What is the number of married men in the force?—436.

6902. What is the number of the single men?—131.

6903. What length of time do the men on an average remain in the force?—Four years.

6904. Not more?—No; that is taking the whole force and striking an average.

6905. What are the qualifications that you exact as to character?—12 months' good character from the last situation, and a testimonial in favour from two respectable householders, not being publicans.

6906. Do you admit men whether they are married or single?—Not married men, if they have more than two children, but single men may marry when they see fit.

6907. You do not require them to ask leave?—No.

6908. The strength of the force in the year 1856 you say was 567. What proportion of those were inspectors, sub-inspectors, and constables?—In the month of January 1856 there were 500 constables, 51 sub-inspectors or serjeants, and 13 inspectors.

6909. I perceive that in the month of June there were still 501 constables, but the sub-inspectors had risen from 51 to 62, the inspectors remaining at 13?—Yes; the probability is that there were some vacancies which had been filled up.

6910. You would say, perhaps, that 61 or 62 is the usual number of sub-inspectors?—Sixty-two would be about the full complement.

6911. Are the causes of rejection by the surgeon very much the same as the causes for which recruits are rejected in the army?—Precisely; I adopt the same principle of examination; the men are stripped, and they are examined precisely the same as recruits are in the army.

6912. As the age is greater than in the case of recruits, your rejections are larger in proportion to the number?—I have not struck the comparative average.

6913. What were the causes of death?—There was one case of small-pox, one died from old age, and one from diseased heart.

6914. (*Sir T. Phillips.*) In the case of death from old age, what was the age at which the man died?—Between 60 and 70; he was worn out; he had been a long time in the service before entering the police. He was a night inspector in the city.

6915. Do the men suffer at all from cholera?—I lost one case in 13 years.

6916. Is diarrhœa common?—To a great extent.

6917. Dysentery or fever?—Fever very slightly, and very little dysentery.

6918. What is the sick movement of the force? Take the men in barracks first; part live in barracks and part reside at their own houses?—The single men live in barracks, and the married men live in their own houses.

6919. What is the strength of the men in barracks?—The number of men living in barracks is 135, and the men living at home are 436.

6920. What are the admissions to hospital of the men in barracks—the 131 men?—Of the 131 men in barracks, and the 436 at home, the admissions on the sick list were, 190 cases from the men in barracks, and 436 from the men at home.

6921. By "admissions into hospital" you mean the treatment of the men at home in their own houses?—Yes, we have no hospital; it is being on the sick list.

6922. What is the ratio per thousand of admissions in the year?—1450 of the men in barracks, and 1440 of the men out of barracks.

6923. How do you account for those in barracks giving a greater ratio of admissions per thousand than the men at home?—Perhaps the personal inconvenience which a single man would feel is less to begin with than it would be with the married man; the pay of the first class constable is 23*s.* per week, the single man would lose 1*s.* per day, and the married man as well, although the single man would feel the loss less than the married man, and consequently the inducement would be greater on the part of the single men to throw themselves on the sick list.

6924. What is the nature of your barracks, are they like soldiers' barracks?—Each station accommodates so many men, and there are six divisions in the city.

6925. Do the men sleep in dormitories?—They sleep in four station houses, in which the men are accommodated for sleeping and living.

6926. Are they like a barrack room?—Yes, there is a mess room.

6927. Do you know what cubic contents there are per man in the dormitory?—I cannot supply you with that at present, but I have made a return of that kind.

6928. Do you make a regular hospital stoppage?—Yes, 1*s.* per day, which goes to the superannuation fund.

6929. Have you a hospital?—No.

6930. You merely treat a man in his barrack room?—Yes.

6931. (*Mr. A. S. Stafford*) What course do you take in the case of infectious diseases?—I send cases of small pox to the Small Pox Hospital.

6932. (*Sir T. Phillips.*) Have you formed an opinion as to which is most conducive to health, the living in barracks or at home?—The sick movement certainly shows against the living in barracks.

6933. Do you attribute the difference to the mere fact of living in barracks as contrasted with living at home, or is there any other element that you take into account?—Probably single men take less care of themselves than married men, and perhaps do not take their proper rest.

6934. (*Dr. A. Smith.*) Has not the venereal disease something to do with it?—We have very few venereal cases in the police.

6935. (*President.*) The greater number of married men probably accounts for that?—Yes.

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6936. (*Dr. A. Smith.*) Are there not more cases furnished by the single men than by the married men?—Yes; I suppose I should not get the married men, they would not come to me, they would go elsewhere.

6937. (*Dr. J. Sutherland.*) Have you many cases of phthisis?—Only one case this year.

6938. Is there a large or small proportion of phthisis generally?—A very small proportion.

6939. Does that remark apply to the barracks as well?—Yes; the proportion is very small, in fact only one man has died of consumption this year; there were no deaths last year.

6940. When you have any bad cases, do you allow the men to remain in the dormitory with the other men who are in health?—I have felt the inconvenience of that, and I have submitted the matter to the authorities in the city; it is very improper to do it, but it has hitherto been done.

6941. (*Mr. A. S. Stafford.*) How long is it since you submitted that matter to the authorities?—About two months since.

6942. Was that the first report that was made upon the subject?—I think it was.

6943. (*President.*) Do you know what the practice is in the metropolitan police as to hospitals?—No; but I think they treat the men in the same way.

6944. (*Sir H. K. Storks.*) Suppose a man is taken seriously ill, do you remove him?—If he has small pox or typhoid fever I should send him away to the Small Pox Hospital or the Fever Hospital.

6945. (*Mr. A. S. Stafford.*) In cases of consumption what is your practice?—The men are attended either at their own houses or in barracks.

6946. (*President.*) Is there much pulmonary disease among the men?—Very little.

6947. Are they very sober?—They are very temperate.

6948. You visit intemperance very severely, do you not?—Yes, they are punished for it.

6949. Would a man who was found drunk be dismissed?—That would depend upon circumstances. If he were an habitual drunkard, yes; for the first offence he would be fined or admonished; if a man is found drunk on his beat he is discharged.

6950. What clothing do the men have?—They have two suits always in use,—namely, one coatee, two pairs of trousers of the current year, and the like suit of the past year; one great coat, one cape and belt, truncheon and lantern; 3*s.* per month are allowed the men in lieu of boots, of which each is required to possess two pairs in good condition; then he has one police hat, and a suit of plain clothes, civilian or non-official dress, which must be provided by each man at his own expense. That is to be worn when a man is watching property as a detective.

6951. (*President.*) A man has only one coatee, not two?—Only one coatee.

6952. What does he do if he gets wet?—He has a cape and great coat.

6953. What is the annual cost to the authorities for a man's clothing?—The annual cost is 4*l.* 5*s.* 6*d.*

6954. Including the upper great coat and the things that last over a year?—Quite so.

6955. What is the pay of the men?—A first class constable receives 23*s.* per week, the second class constable 22*s.*, and the third class 20*s.*

6956. What do the serjeants and inspectors get?—The inspectors pay is about 120*l.* a year; a serjeant receives 28*s.* per week.

6957. Do you give a man the same pay during his first month's probationary duty?—Each man undergoes a month's probationary duty, and his pay is 17*s.* per week, and he continues at that amount till he is certified.

6958. How are the men fed?—They buy their own rations out of their pay.

6959. They buy what they choose; you do not interfere?—Yes.

6960. Do the unmarried men mess together?—Yes, they do. Of course their meals are very irregular; they have no regular hour of messing like the army.

6961. Do you know what their ration is practically?—I can only give a rough guess. Generally rump steaks and mutton chops; very rarely joints.

6962. Do you think they get 1lb. of raw meat per day?—Yes.

6963. With bone?—They are very shrewd; they do not buy bone; they generally live on steaks.

6964. (*Mr. A. S. Stafford.*) Is their messing entirely voluntary?—Quite so.

6965. (*President.*) You do not overlook them to see that they feed themselves upon that which is most wholesome?—Not at all.

6966. (*Sir T. Phillips.*) Do they drink beer?—Yes.

6967. And spirits?—They are not controlled in this respect.

6968. (*Sir H. K. Storks.*) Are the men sober, as a body?—I should say so; they are very respectable.

6969. (*President.*) Are you satisfied with the houses which they occupy as barracks?—Some of them I have reported against. There are four in the city.

6970. Are they tolerably well ventilated?—Yes, very well; one is in Moor Lane, a newly-built station; that is No. 1 station. No. 2 station is in Smithfield. No. 3 station is in Fleet-street. No. 4 station is in Bow Lane; those are the four stations to accommodate the men.

6971. Have you ever been in the dormitories early in the morning?—Constantly.

6972. Is the air pretty sweet then?—It is not very, and that is a thing I have complained of; the men are not very cleanly.

6973. Do they close every window they can;—They shut up all the windows.

6974. Have you no means of ventilating, except by the windows?—No, and the door.

6975. There are no orifices communicating with the open air?—No; there is no regular system of ventilation.

6976. Do you contemplate any change in that respect?—Yes; it is contemplated to make very great changes.

6977. Do you recollect what is the distance between the beds of the men?—I do not; but I can fill that up.

6978. The ratio of sick is higher in the barracks than among the men living at home?—Yes.

6979. And it is higher than the ratio of sick in the dragoon guards?—Yes. In the case of the dragoon guards the admissions were 929 per 1000.

6980. And among your men the ratio per 1000 was 1440 of men living in their own houses, and 1450 of men in barracks?—Yes.

6981. How do you account for that unfavourable contrast?—The duty of the police is a more severe duty, I should imagine; they are longer on duty. The night men remain eight hours on duty; they go on at 10 o'clock at night, and go off at 6 o'clock in the morning.

6982. The force is divided into day police and night police?—Yes.

6983. Do the day men never go on night duty?—That is in the discretion of the inspectors of the different divisions.

6984. Still so long as a man is considered a day policeman he is not put to night duty?—Not unless anything of importance should occur to demand a change.

6985. How are the day police sub-divided?—The day police are sub-divided into two relays, one commencing at 6 a.m., and relieved at 10 a.m.; the second relay commences at 10 a.m., and is relieved at 2 p.m.; the first relay resumes duty at 2 p.m., and is relieved at 6 p.m.; the second relay resumes duty at 6 p.m., and is relieved at 10 p.m.

6986. The night police come on at ten o'clock when the day police are relieved?—Yes.

6987. How long does their duty last?—Till six in the morning.

6988. For how many nights?—For seven, every night in the week.

6989. (*Sir T. Phillips.*) Throughout the year?—Yes.

6990. When do the night police who are in barracks get any sleep?—All the night police who are in barracks are supposed to be in bed at 8 a.m., and must leave it by 3 p.m. The day men are in bed by 12 p.m.; at that time the lights are extinguished and absentees noted.

6991. When you find any absentees, what is done?—They are admonished for the first offence and fined for the second.

6992. (*Mr. A. S. Stafford.*) Can you give any comparative statement of the sickness between the night men and the day men?—Yes, I will do so. The full complement would be 336 for the day duty and 231 for the night, making altogether a total of 567. I find the admissions to the sick list in 1856 were 407 day and 421 night.

6993. What is the per-centage relatively to the numbers?—139 for the day force and 161 for the night; the sick amongst the night men is greater.

6994. (*Sir T. Phillips.*) Out of how many men are you giving the proportions?—Out of 336 of a day force and 231 of a night force.

6995. There appears to be the same number of sick persons as there are men employed?—Yes.

6996. (*President.*) Do you think that is the night duty which produces that difference?—I should be disposed to attribute it to that.

6997. You have stated that the number of deaths in 1856 were three?—Yes.

6998. What was the ratio per 1,000?—5·28.

6999. What was the average of the force constantly on the sick list?—21·14.

7000. And the average per 1,000?—36·45.

7001. What was the number of days sickness per man per 1,000?—13·5 days.

7002. What was the average daily sick in the force throughout the year?—21·14.

7003. What was the ratio per 1,000 of those constantly sick?—38·8.

7004. What were the admissions upon the sick list for the year?—818.

7005. And the ratio of admissions per 1,000?—1442·6.

7006. What was the average duration of each attack of sickness?—16·6 days.

7007. What is your reason for maintaining the system of exclusive night duty, and so protracted when it is exacted from the men?—A man can appeal to the inspector or to me, and say "I wish you would place me on day duty;" but my instructions are these, to regard a man who feels himself incompetent for night duty as unfit for the force.

7008. You give the men on duty in the day relief every four hours, why not give the same relief to the men on duty at night? why keep a man on his beat for eight hours consecutively at night, when it is only four hours in the day?—Irrespective of breaking a man's rest at night and the domestic inconveniences it would occasion, I presume it is considered that night duty is less laborious, that there is less absolute work done than in the day duty.

7009. What is the population of the city?—The population of the city is 128,851, and the number of persons whose business brings them into the city daily has been estimated at about ten times the number of the residents, so that considering the amount of labour to be done in watching the stoppages in the streets and so on, there would be more tax on a man's physical powers in the day.

7010. On the other hand the responsibility is greater at night?—Yes, the night force have to watch about 16,000 houses and buildings.

7011. (*Sir H. K. Storks.*) A man cannot sit down during the eight hours that he is on duty?—No.

7012. (*Mr. A. S. Stafford.*) Are not the temptations to drink and vice generally greater at night than in the day?—Yes, that is my impression.

7013. Would not that account for the larger proportion of sickness among the night men?—A greater number of men prefer the night duty.

7014. Do many men employed in day duty apply to be put on night duty?—That has not come under my notice, but men have come in and have said to me that they preferred the night duty to the day duty, many of the older men.

7015. (*President.*) But that is not reconcileable with your statement, that the night men have asked to be put on day duty?—It would not come before me; it would come before the inspector. They generally pick out the smartest men for the day duty—the best looking and smartest men.

7016. (*Sir H. K. Storks.*) They do not put the night men on, on account of their possessing any especial qualifications, such as vigilance?—That is a matter that would rest with the inspectors.

7017. (*Sir T. Phillips.*) Are single men selected for night duty in preference to married men?—I do not know.

7018. (*Mr. J. R. Martin.*) Is the selection made for night duty with reference to a man's steadiness of conduct?—I cannot answer that question—that rests entirely with the inspectors.

7019. (*President.*) You have stated that the sick movement is rather greater among the night policemen than among the day policemen. Is there a greater number of resignations from the force on account of ill health among the night duty men than among the day duty men?—The number of resignations and retirements from bad health in 1856, was 18; one died who had been on day duty, three were pensioned from day duty, and six resigned from day duty; two died on night duty, and six resigned on night duty.

7020. Therefore there is rather an excess in the number of resignations among the night duty men?—Yes.

7021. The resignations were six each?—Yes.

7022. Therefore there was rather more resignation in proportion to their numbers among the night duty men than among the day duty men?—Yes.

7023. (*Mr. A. S. Stafford.*) After their resignations, do you follow the men at all—do you know what becomes of them as to their mortality or health?—No; they generally get into situations as porters.

7024. You cannot accurately state then the number of deaths every year in that police force?—Of those who are in the force I can.

7025. But not of those who resign?—No.

7026. (*Dr. A. Smith.*) Upon an average, how many years do the men serve in the force?—Four years.

7027. How long are they permitted to continue on the sick list before you discharge them from the force?—That is left entirely to the discretion of the surgeon.

7028. How long would you continue a man if he was suffering from some disease that could not be cured for a long period?—The order is a month, but I do not report a man in a month. If a man is off duty a month, my instructions are to make a special report upon him.

7029. If a man is suffering from serious disease, either distinct consumption or any other disease that will disqualify ever afterwards for service, would you discharge him at once or continue him on the sick list?—No, I should not discharge him. I have kept them on sometimes as long as 12 months.

7030. In a case of decided consumption?—Yes.

7031. Had you any prospect in such a case as that of the man being cured?—No, it would occur in this way. A report would be made on the state of his health, and that would be entertained by the Police Committee, who would allow him to remain on the sick list until something were done for him in the way of remuneration or pension.

7032. Is that in consideration of his having been a good man?—Yes.

7033. But that would not be the general practice?—No.

7034. If a man come to you in a state of consumption, and you used the stethoscope, and you find

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decided symptoms of progressive consumption, would you continue him in the force, or how soon would you discharge him?—In a month. Probably this return will give the commission a fairer estimate of the wear and tear of the force than anything else. (*The same was handed in. See App. No.* LXVIII.)

7035. (*Sir T. Phillips.*) Do the resignations take place principally in the lower grades of the force?—I cannot tell you that.

7036. In what way could a man better his condition who was a first class constable and left the force?—I do not think he would better his condition as to his pay, but he might in this way; he would have probably more time to himself, he would have his Sundays to himself, which the policemen have not.

7037. (*Mr. J. R. Martin.*) What they are anxious for, is a position of more ease?—Yes, it is not so much the pay.

7038. (*President.*) Is there any other point you wish to mention?—In the early part of this year we had men pensioned off to the number of 57. The return I have handed in will show the causes of their unfitness, as certified by me, the length of their service, their ages, and whether they had been on day or night duty.

7039. What were the proportions between them?—On day duty, 22 were pensioned; on night duty, 25. Both day and night, which would represent inspectors who go on and remain 48 hours on duty, both day and night, six. Then there are those who are on night duty six months alternately, viz., serjeants,—the number is four. When I had first charge of the force they used to change every month, but I found that did not agree with them, and I recommended them to be changed once in six months.

The witness withdrew.

Dr. Wm. Farr, F.R.S.

WILLIAM FARR, M.D., F.R.S., examined.

7040. (*President.*) What office do you fill in the registrar-general's department?—I am at the head of the statistical department in that office.

7041. I believe you have made an application to have the army statistics communicated to your department to be amalgamated with, and published with, your returns?—The registrar-general addressed two letters to the Secretary-at-War on that subject.

7042. Have you got them with you?—I have got the two letters.

7043. Will you state the grounds upon which that representation was made?—I will read one of the letters. This was addressed to Lord Panmure by the registrar-general, Major Graham. The date of the first letter is the 1st of December 1854. The date of the letter that I am going to read is the 10th of February 1855:—"My Lord, the 26th Section of "6 and 7 William 4. c. 86, provides for the regis- "tration of the deaths of British seamen, but no pro- "vision is made for recording in this department the "deaths which occur in the British army abroad; I "am aware that upon inquiry at the War Office "relations may obtain information as to the last "returns received respecting soldiers, but the enclosed "forms show that few facilities are given to the "public in making these inquiries, and that precau- "tions are considered necessary to prevent un- "necessary queries, and to limit the investigation to "the nearest relatives or representatives of the party. "It appears to me very desirable that in this central "office, which contains the record of 20,000,000 "deaths, marriages, and births which have occurred in "England and Wales since 1836, a record should also "be kept of the deaths of all soldiers who die abroad. "I am aware that it is far from desirable to make any "addition to the numerous periodical returns made by "all officers commanding regiments, and I am also "aware of the difficulties in time of war of obtaining "the exact information as to the date and cause of "death, when so many die on board transports and in "distant hospitals; but I submit to your lordship that "these difficulties may be easily surmounted, and that "it will be a great boon to the public if arrangements "can be made that I be furnished as soon as possible "with a nominal return for each regiment in Her "Majesty's service, of every soldier whose death has "taken place in 1854; arrangements being at the "same time made that similar information should be "sent to me in future, at such periods as may be "considered best, either monthly, quarterly, or yearly. "Here the names would be indexed alphabetically, "and information at once afforded to the public. I "take the liberty of enclosing a form which might "be used; but if your lordship is disposed to enter- "tain the application which I thus venture to make "to you, the authorities under your lordship's direc- "tion will probably be able to prepare a better de- "scription of form." I will now read the answer dated the 10th of August 1855:—"Sir, I am directed "by the Secretary-at-War to state, in reply to your "letter of 10th February last, that without at present "expressing any opinion upon the suggestion you "make for the registration of the deaths in the British "army, it is found, after considering the subject, that "at the present time and during the war, the object "you have in view would involve not only a great "deal of trouble in the offices at home, but would "impose new and onerous duties upon commanding "officers abroad, which under existing circumstances "it would not be expedient to impose upon them. "Under these circumstances the Secretary-at-War is "of opinion that, for the present, the consideration of "the question had better be postponed. I have the "honour to be, Sir, your most obedient servant,

"(Signed) B. HAWES."

7044. You are aware that there are in the War Department quarterly returns of the deaths from all the stations, and from the troops at home?—I was not aware of that. I understand that there is an arrangement for making certain returns.

7045. How frequently do you contemplate that a communication shall be made of the amount of mortality and sickness to the registrar-general's office?—I do not think that any particular period is mentioned; it is suggested that a return should be made to him, as the others are, quarterly or annually.

7046. Would that be sufficient for your purposes?—Yes.

7047. (*Sir H. K. Storks.*) You required nominal rolls for each regiment, did you not?—Yes, actual certificates, as it were, of all the deaths that occurred in the army.

7048. (*President.*) The nominal returns of the deaths in the army to the War Department are only annual. Would that be sufficient for your purposes?—Yes; but it would probably be advantageous, if they were made quarterly, as the returns of the civil population are made.

7049. You have two objects in view; first, you want to amalgamate with your own statistics (irrespectively of names) the mortality of the whole British population, whether at home or abroad, including, of course, the army. And the other object for which you wish a nominal return is, that the relatives should apply then to the registrar-general's office to know the fate of a man in the army, as they do now with regard to the death of a civilian?—Yes, that was the second object; it would be important that the army should have the same advantages from registration as are enjoyed by the civil population.

7050. Do you get returns from the navy?—Yes; they are made to the office under an Act of Parliament.

7051. You also get returns from merchant vessels, do you not ?—Yes.

7052. Do you get returns of the death of English residents from foreign consuls ?—Yes.

7053. Those are excluded ?—No.

7054. (*Sir H. K. Storks.*) Do you get the colonial returns ?—No.

7055. (*President.*) That would not be your object ? —No ; there is a registration in many of the colonies.

7056. (*Sir H. K. Storks.*) You do not get a regular return from the colonies ?—We get no official return from the colonies.

7057. (*Sir T. Phillips.*) Are the returns which you receive now of deaths out of England confined to deaths which occur on ship-board ?—Yes.

7058. Have you no other record of deaths out of England except such as occur on ship-board ?—Except those ; and the returns from British consuls abroad.

7059. (*President.*) Do you imagine that it would relieve the War Office of much trouble if all the applications of relatives with respect to the deaths of soldiers were directed to you in lieu of going to the War Department ?—I do not know what trouble the War Department is put to under the present arrangement, but it would give very little trouble to the department with which I am connected.

7060. You make a charge for it, do you not ?—Yes.

7061. What amount ? - 1*s.* for a search to ascertain that a death has taken place, and also if a certificate is given 2*s.* 6*d.*

7062. Would it be possible for you, supposing the War Department entertained it, to make a reduced charge for all soldier's relatives on account of their being in the public service ?—That might, I think, be easily arranged.

7063. (*Sir T. Phillips.*) Do those fees form a part of the stipend of the officers of the department ?—No ; all fees in public offices are paid into the Exchequer.

7064. (*Mr. J. R. Martin.*) You would require a nomenclature of the same kind with your own, in order to admit of a just comparison and arrangement ? —It would be desirable that the ages and causes of death should be returned in nearly the same form as they are returned for the civil population.

7065. (*President.*) Are you aware that the great mass of applications by the relatives of soldiers to the War Department are not to ask whether a man is dead, but whether he is alive ?—No, I was not aware of that.

7066. So far as the death is concerned, do you think you could do it with greater facility than the War Department ?—I am not prepared to say whether the facility would be greater in our department, but it did occur to the registrar-general that it would be desirable that the whole of the deaths among Englishmen should be registered, and under the present arrangement in making his quarterly returns, and in making his annual report, he does not state the whole mortality occurring.

7067. For that you would not want a nominal return ?—Not for that purpose.

7068. Would you require to have furnished the sick movement?—It would be very desirable that we should have each individual fact ; that there should be a return of the death of each soldier, stating his age, the cause of his death, and his name. We get that now from every parish in England. The returns are not made to us, as they are in France, by the local officers in the form of tables ; the actual facts are sent to the registrar-general's office, and there they are analysed and thrown into such a form as you see.

7069. The French system is the reverse of what you propose. Instead of centralizing their knowledge, they disseminate it ; they send an account of a man's death to be registered in his own commune, as if he was a civilian, and they have no complete statistics of the mortality of the French army ?—They have complete statistics, I believe, in the War Department; but I am not aware that they are published. The deaths of the soldiers in the Crimea appear in the civil register under the communes in which the soldier was domiciled.

7070. Scattered all over France?—Yes. I will read a paragraph from the registrar-general's last report, in which he says, " Under the 96th article of the Code " Napoleon, information of the death of every French " soldier, who dies out of France, should be sent home " by the regimental authorities, and entered on the " civil registers of his last known place of residence " in France. This law had been laxly executed until " the last war, when, upon a representation made to " the war minister at its commencement, he replied, " ' qu'il allait prendre les dispositions nécessaires pour " ' que tous les décès militaires fussent inscrits, autant " ' que possible, au dernier domicile connu en France.' " Under these regulations about 20,000 deaths of " French soldiers and sailors were registered. The " present arrangements for the civil registration of the " deaths of soldiers and seamen in foreign parts are " unsatisfactory, both in France and in England. The " deaths of French soldiers abroad are improperly " confounded with the deaths in France; whereas they " should appear in the general register under a sepa- " rate heading, and be compared with the strength of " the army abroad ; at the same time the aggregate " deaths should be taken into account, and set off " against the aggregate births. In England, the " deaths of the soldiers abroad are never inscribed " upon the civil registers ; and I have no means of " ascertaining either the actual mortality or the causes " of death of the whole of the English population, " including the army and navy."

7071. I thought you said you had returns from the navy ?—They are returned by the navy partially, but they are not satisfactorily given.

7072. Since when have you had those returns ?—From the year 1837.

7073. (*Mr. A. S. Stafford.*) In what way are the returns incomplete ?—The whole of the deaths are not returned.

7074. For what reason ?—They are not returned.

7075. What class of deaths are not returned ?—Some deaths on ship-board are not returned, other deaths occur in hospitals ashore, in foreign countries.

7076. (*Sir H. K. Storks.*) How do you know that fact ?—We know from the numbers.

7077. (*President.*) You know that the whole mortality in the navy and the numbers sent to you do not tally ?—Yes.

7078. (*Sir Thomas Phillips.*) As to the army at home, are the deaths communicated to you ?—The deaths of soldiers are registered as the deaths of the rest of the population in England and Scotland.

7079. With regard to the mode adopted in France, of localizing the deaths, would not that be explained by the conscription. I suppose each particular district has contributed a certain portion of its population to the army ?—Yes; the Code Napoleon contains a chapter on the registration of soldiers who die out of France ; it is the 96th section.

7080. (*Sir J. Clark.*) Would you require the same form of return from the army ?—Not precisely the same, it might be modified.

7081. But that they should give you all the essential facts ?—Yes.

7082. (*President.*) Supposing that those statistics were communicated to you, would it be necessary to make any alteration in the form as to the classification of the diseases ?—I think not. The nomenclature would have to be modified slightly.

7083. What is the nomenclature that is now used in the army returns ?—I am not aware.

7084. Have you the classification of diseases which was discussed at Paris ?—I and Doctor D'Espine drew up a nomenclature of fatal diseases which might be used throughout Europe.

7085. It was not adopted then ?—The nomenclature was. We were not asked to prepare a classification, but we thought it right to throw it into the form of a classification, and our classifications were not the

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same, and the consideration of the classification was postponed; the nomenclature was adopted.

7086. When is the classification to be discussed?—In Vienna, in September next.

7087. Do you expect that by a system of give and take, you will be able to agree upon one that will obtain throughout the whole of Europe?—We shall try it, but I am not confident of the result. The nomenclature is agreed to.

7088. (*Sir Thomas Phillips.*) Has that been adopted by various countries?—The nomenclature has.

7089. (*President.*) In the army classification they put, I think, the bowel diseases under diarrhœa and dysentery, which you put under zymotic diseases?—Yes.

7090. Therefore there is a different heading in that respect?—Yes.

7091. Have you a different heading as to fever?—Yes. Fever is put under the first class of zymotic diseases.

7092. You have a greater number of subdivisions of fever, I think. Have you febricula in your nomenclature?—No, we have not. We were anxious not to multiply the forms of fever beyond the power of discrimination. Among all the practitioners of the country we found that there were a great number of practitioners who could distinguish diseases with minute accuracy, but that the whole of the practitioners of the country would be unable to do so. We therefore have found it necessary to throw several of those forms of fever together. In the forms that we have we have yellow fever, remittent fever, ague, typhus, relapsing fever, and typhoid fever.

7093. The army return has febris intermittens, febris remittens, febris continua communis, febris icterodes, and typhus, which you have?—Yes.

7094. Have you "catacausis?"—Yes; that is very rare. We have no instance of death by spontaneous combustion in this country.

7095. I see included among the diseases of the stomach and bowels, dysentery, diarrhœa, cholera epidemica, which you put all under the head of zymotic diseases. Are they not preventible?—Yes, to a certain extent, but we do not say preventible; we put them under "zymotic." I believe a great number of deaths from those diseases may be prevented by proper sanitary arrangements.

7096. Among the diseases of the brain, in Colonel Tulloch's form, there is apoplexy, which in the army is almost invariably the result of excessive drinking?—It is impossible to say.

7097. Delirium tremens is put down as a disease of the brain?—Under the new arrangement I have proposed to put intoxication and delirium tremens under alcoholismus.

7098. Then we have in this return again a number of diseases, consisting of 43 or 44, headed as "other diseases," which have no other classification?—Yes.

7099. In looking at the returns from the Crimea, I see that all the "other diseases" produced as many as 5,631 admissions, should you say that those ought to be classified in the same manner?—I think that is a great objection to the arrangement; I believe it was not proposed as a complete arrangement nor as a nosology, but for a particular purpose.

7100. Ought not the classification to be more minute than that?—I think that as a classification it is necessarily imperfect; there can be no classification of natural objects or of diseases which does not embrace all the objects and assign a place to each. It is necessarily imperfect; it is quite clear that the arrangement there proposed was not intended to apply to all circumstances and all cases.

7101. (*Mr. J. R. Martin.*) That form applies to all the colonies wherever British soldiers serve?—Yes.

7102. (*President.*) In the first report of the registrar-general in 1839, you state in a letter to him that "Cullen's" nosology is in general use in the public services; but pathological anatomy has made great progress since the time of Cullen, and his nosology no longer presents diseases in their presumed natural relations. It is not suited to statistical purrposes and has been properly abandoned in the statistical reports on the diseases of the army, although Cullen's nosology has been used in the army medical returns down to a late period. Do you still hold that opinion, or have you seen reason to modify it?—It is quite correct, and I have seen no reason to modify it.

7103. You state that the statistics in the army are looked upon with little interest, as the people of England are in absolute ignorance on the subject, and it is to remedy that that you wish to have the military statistics incorporated with the civil?—That appears to be very desirable.

7104. Would it not be an advantage that they should be constantly before the public, and their interest excited in them?—Yes.

7105. Then you state, "By such returns the exaggeration that always attends great losses would be dissipated, and the public would be enabled to see precisely by the diseases and the mortality the sanitary condition of the British army under all the different circumstances in which it may be placed?"—Yes, I will read the passage from the report before me:—The Act has made no provision for the registration of the officers and soldiers of the army who die out of England; so that while the name, age, rank or profession, place, time, and cause of the death of every man, woman, or child that dies at home are preserved in the registers, the names of the men who uphold in arms the cause and the fame of their country abroad find no place in these records. Otherwise every family that has sent forth its sons, and has lost them in the war, would have the satisfaction of knowing that their names are inscribed in a perpetual record, whether they died at Varna, perished in Scutari, sank under the waves of the inhospitable sea, or slumber at Alma, Balaklava, and Inkermann, under the earth of the Crimea, consecrated only by their bravery. It would be useful in other respects to have authentic official returns of the deaths and the causes of death in the army as well as in the civil population; for it would at the same time dissipate the exaggeration that always attends great losses, and enable the public to see precisely, by the diseases and the mortality, the sanitary condition of the army under different circumstances."

7106. Do you propose to include only the deaths and not the diseases?—The deaths only. I should say that the registrar-general would necessarily only deal with the deaths, and only deal with them in connection with the civil population at home, so as to make his account of the deaths complete in the whole of the English nation, but by no means to supersede the separate report of diseases and mortality in the army by the army medical board.

7107. (*Sir Thomas Phillips.*) Suppose that a soldier died in New Zealand, you would desire to have a record of his death here?—Yes.

7108. Supposing him to be a civilian, then you would not have it?—No.

7109. Why?—We think that the soldier when he leaves his country is not an emigrant nor an exile, but must be considered a part of the English nation, and therefore his death ought to be registered among those of the English nation. In taking the census we include the army, therefore in returning the deaths we should return the deaths in the army. The registrar-general gets a return of the births, and by subtracting from them the total deaths, the natural increase of the population is shown.

7110. Suppose a civil officer stationed at New Zealand were to die, would you have a record of his death sent home?—No.

7111. Why?—I do not know. Colonists should be registered in the colonies. But it would be very desirable that all civil officers attached to this country should be registered in this country, as property might depend upon the registration of those lives.

7112. (*President.*) You have paid a great deal of attention to the comparative rates of mortality in different occupations, and you are acquainted, I believe, with the rates of mortality as given in the Blue Book of Army Statistics?—I have paid considerable attention to the rates of mortality prevailing in different classes of the English population, and I have prepared a short statement which I will submit to the Commissioners on that subject. I have made an estimate of what the mortality of the effective men in the army, including non-commissioned officers, privates, cavalry, infantry, and engineers would, be if the rate of mortality in the army was the same as the rate prevailing in healthy places in England. (*See Appendix No.* LXX.)

7113. That is the mortality among the males of the same age and class of life?—No; I should not say the class of life. For the purpose of the census a return of the ages of the army was procured from the commanding officers of regiments through the War Office, so that we have the number of soldiers of different ages. We have 136,277 of all ages returned, then we have the number at the age of 20 and under 25, 50,387, and the annual number of deaths at the rate prevailing in all England, 424. From another source we have the mortality at those ages in the healthy districts of England, including the whole population in 63 large districts of England; there is no selection made, the sick and the healthy are all included, just as they were taken at the census.

7114. Are any of those districts mining districts?—No; they are chiefly agricultural districts, the healthiest in England. There are 63 in different parts of the country, in Northumberland, in Devonshire, in Sussex, and all over the country; the number of deaths of such men would be 1,051, and that would give the annual rate of mortality among the effective men of the army as 7·7, or less than 8 in 1,000, at the rate prevailing among the healthy country population of England and Wales. Then I thought the Commissioners would like to see what the mortality would be if the rates were the same as those that prevail all over England, and under those conditions the number of deaths annually, among the effectives of the army, would be 1,248, and the rate of mortality would be 9·2, or rather more than 9 in 1,000 at the rate prevailing among the whole population of England and Wales. Then I thought the Commissioners would like to see what the mortality would be if it was at the same rate as in the unhealthiest cities in England, such as Manchester and Liverpool, the most unhealthy districts in England. This is such a rate of mortality as I conceive the army ought not to experience in England; the number of deaths under those circumstances would be 1,688, and the annual rate of mortality would be 12.4, or rather more than 12 in 1,000 according to the rate prevailing in one of the unhealthiest cities, Manchester. If I had taken Liverpool the result would have been just the same.

7115. What are the ages that you have given?—They are taken so as to give the mortality among the population of the same ages as that of the men of the army.

7116. What ages do you consider those to be?—They are shown in the table which I give in.

7117. (*Sir T. Phillips.*) Did you say 12 per 1,000 under the most unfavourable circumstances?—Yes, 12·4.

7118. Is the army largely recruited from the population of those towns that are unfavourably situated?—I am not prepared to answer that question.

7119. (*President.*) The household cavalry being 11·1 per 1,000, has rather the advantage of the most unhealthy cities?—Yes.

7120. But the guards, which are 19·8, are considerably worse than the most unhealthy cities?—Very much worse.

7121. Is London one of the most healthy cities?—Yes; the mortality of London is much less than that of Manchester.

7122. (*Sir H. K. Storks.*) Where do you put London in point of health?—It occupies a sort of middle situation; it is the healthiest great city in the world.

7123. For its population?—No; I should say that there is no city of any magnitude that experiences so low a rate of mortality as London.

7124. The mortality is less in London than in Paris?—Yes.

7125. (*Sir T. Phillips.*) Or than in any other European capital?—Yes.

7126. (*President.*) It varies very much in different districts, does it not?—Yes.

7127. In Westminster the mortality is higher?—Yes.

7128. In the district of the Tower the mortality is higher?—Yes.

7129. These are two districts in which the guards are quartered?—Yes; those circumstances are unfavourable.

7130. Are the Portman barracks healthy?—Yes.

7131. (*Mr. J. R. Martin.*) For any accurate result it would be necessary to reckon London as an aggregation of many cities rather than one, the differences being so great between one quarter and the other?—Yes.

7132. (*Sir Thomas Phillips.*) That is very much influenced, is it not, by the class of people that occupy particular parts of London?—Yes. The mortality of soldiers in barracks should not vary to the same extent as the mortality of people living in districts, often of distinct occupations, and in totally different circumstances.

7133. (*President.*) Have you any other table of comparison?—I have a table in preparation of the mortality among several occupations, such as among tailors, shoemakers, carpenters, butchers, and so on. (*See Appendix* LXX.)

7134. And among miners?—Yes.

7135. And printers?—Not printers.

7136. Have you not got printers?—Only on a small scale.

7137. Printers of newspapers?—Yes; the mortality among the printers of the *Times* I could get.

7138. But the mortality among the printers of the *Times* is considerably less than that of the general scale?—Yes, it is; it was in the last return that I saw.

7139. They have taken pains to ventilate their offices and rooms, have they not?—The working rooms have been improved.

7140. And they have reduced their rate of mortality by that, have they not?—Yes.

7141. (*Sir Thomas Phillips.*) Is not the number of men employed on the *Times* too small to afford any standard of comparison?—I think not. The rate of mortality among blacksmiths is 7·7, bakers and confectioners 8·7, persons engaged in the wool, cotton, and silk manufactures 8·7, miners 8·9, carpenters and joiners 8·9, grocers 9·0, labourers 9·5, shoemakers 9·5, butchers 10·3, tailors 11·5, inn-keepers, licensed victuallers, and beershop keepers 11·7.

7142. (*President.*) The tailor's conditions of work are very much like the shoemakers, except that different muscles are employed in his trade?—I rather think that tailors work together in large rooms.

7143. (*Dr. J. Sutherland.*)—Is the tailor more subject to consumption than the shoemaker?—Yes, I suppose he is; the mortality ranges from 9 to 12.

7144. (*Sir T. Phillips.*) Do you include among the miners, the colliers?—Yes.

7145. In some districts of the country in the North of England, where proper arrangements are made for the ventilation of mines, the mortality is low?—It is.

7146. (*President.*) In the mines subject to fire-damp and explosion the necessity for ventilation is greater, and there are lower rates of mortality than in other mines?—Than in Staffordshire and in the Welsh districts.

7147. So that in the mines that are naturally the most dangerous there is the greatest longevity?—The mortality is the lowest.

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7148. (*Sir T. Phillips.*) Is the longevity in the mining class greater now than it was 20 years ago?—We have no means of determining that.

7149. How far back can you carry your calculation?—We cannot carry it back at all.

7150. (*Mr. J. R. Martin.*) You have paid much attention to the health and history of the civil communities both within the United Kingdom and abroad?—I have.

7051. You are likewise well acquainted with the sanitary history of the British army, and with the writings of medical officers on sanitary science during the last century?—It has been my duty to read them all.

7152. Has not the long neglect of sanitary science in civil life and in military bodies been mainly due to the circumstance, that no separate and independent department has existed in either community?—It always appeared to me an anomaly, that while a great number of very able men were employed for prescribing for the sick, there was no class of men who devoted their whole attention professionally to the preservation of health among the population who were not sick.

7153. The treatment of disease being of more obvious and pressing necessity, has not that department of medical science received from our profession a too exclusive attention to the prejudice of the more worthy science of hygiene?—I think decidedly it has.

7154. Has not the general interest, and that of the government, in practical hygiene been greatly increased within the United Kingdom by the recent appointment of certain qualified medical officers of health within our great cities—persons separated in their functions from the treatment of disease?—I am quite of opinion, that the only way in which we can induce a large body of men to devote themselves to hygiene, is to provide appointments of that class, where they can get adequate remuneration for their labour. The arrangements ought to be such as would secure the same amount of remuneration to them as is obtained by gentlemen who devote themselves to the treatment of the sick.

7155. Would not a like interest resulting from correspondence of duties attach to the appointment of an officer of health for the military service of the state?—There has been a constant tendency to division of labour in the several professions, and particularly in the medical profession. I conceive it would be highly advantageous to have a small class at first of men devoting the whole of their time to the study of the sanitary arrangements of the army, and making suggestions for their improvement.

7156. You think that the time has arrived when in the army, as in civil communities, a proper division of labour requires that the department for the cure shall be separated from that for the prevention of disease?—I think it would be advantageous that they should be connected, and that they should work together intimately.

7157. As cognate sciences?—I think it would be very desirable that there should be a class of men, perhaps a department, devoting itself exclusively to sanitary conditions, and the study of the sanitary conditions which would preserve the health of the army.

7158. Do you not think, with reference to the duties of a medical officer, that he should receive preliminary instruction in that department of medical science before entering upon the duties of the army?—I have always been surprised, and have greatly regretted, that there has been no such system of instruction in this country. When I was at the university at Paris there was a course of lectures on hygiene by one of the ablest men in that university, and it was attended by a majority of the students to the number of 1,200. It was attended with the greatest possible interest, and the consequence was that a general knowledge of hygiene was spread abroad in France, and was so general as to support a journal expressly devoted to that subject. When I came to England I was surprised to see that it formed no part of our course of study here, and, so far from being encouraged, it was absolutely discouraged by our colleges; and on looking over the examinations, so far as I could gather their nature in the army and navy, there did not appear to be any examination on the subject, which I saw with great regret.

7159. Does it not result in this, that medical officers entering the public services deficient in a knowledge of that greatest branch of our profession, must, in future life, acquire that knowledge very much at the expense of the seamen and the soldiers?—I conceive that their not being acquainted with that science must render them much less useful than they otherwise would be to the army; they are a very able body of men, and quite capable of making themselves acquainted with this important branch of science, and using it with great benefit to the army and the country.

7160. The result is, that an officer of health is quite as necessary for the purposes of organized bodies as for civil communities?—I can see no distinction between the two classes of men, except that in organized bodies there is more facility for carrying out sanitary arrangements than in unorganized bodies.

7161. Would not a manual of sanitary science be of much service to a young medical officer, and save him from many difficulties that he would have to encounter in the course of his service?—Undoubtedly.

7162. Would not the possession of such a work promote emulation and competition, both of which are so necessary to the advancement of science; and would not the contemplated separation of the two departments, each having a proper head, promote so desirable an end?—I am not sure that the separation should be absolute between the two.

7163. That they should be associated, but their functions should be separated?—Yes, I always held in promoting the health and the sanitary improvement of the civil population, it was desirable that it should be carried out through the agency of the medical profession.

7164. But separately, as it is in the great cities now?—Yes, the men would receive the same medical education, but they should be engaged in discharging those two separate functions.

7165. (*Sir T. Phillips.*) You state that sanitary science has been better taught and known in France; is the sanitary state of French towns, civil or military, better than in England?—The mortality of England and France is very nearly the same.

7166. But how is the sanitary condition of French towns as compared with English towns?—In some respects it is better, and in others it is much worse.

7167. Take Paris?—It is in some respects much worse.

7168. Are the Commissioners to understand you to hold this opinion, that sanitary knowledge ought to be communicated generally to medical men; or that there should be a separate class of medical men devoted to sanitary matters?—I hold, that all who enter the medical profession should go through the same course of education, but that, in practice, it would be very desirable that different classes of men should devote themselves to different subjects; one should practice surgery, another medicine exclusively, and another sanitary science, one of the first and perhaps the most important, and, therefore, requiring all the energies and attention of a separate class of men.

7169. You do not propose that there should be a separate class of men to attend people in health and another class of men to attend them in disease, but that the man who is a medical adviser should in some shape have given to him such knowledge on sanitary subjects as will make him competent to advise what are the best sanitary conditions?—Yes, I think that every medical practitioner should be prepared to do as much as that, and I think that in a civil population it would be a great advantage to have a health officer in every district.

7170. (*President.*) Practically now the medical men that you would send for to treat you in case of

disease are not the same men that you would send for if you wanted a town put in a good sanitary state ?—Not necessarily.

7171. You would probably send for a man like Dr. Duncan, of Liverpool, rather than send for Sir Benjamin Brodie or Dr. Williams ?—Clearly. I conceive that it is a distinct branch of the one science of medicine.

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7172. (*Dr. A. Smith.*) Could you state to the Commissioners what is the ratio of mortality among men from consumption, between 20 and 40, in the United Kingdom ?—It is 3.9 per 1,000, as shown in this table, which I beg leave to hand in with the others, to which I have referred in my evidence.

The same were handed in. (*See App. No.* LXX.)

The witness withdrew.

JOHN MILTON, Esq., examined.

J. Milton, Esq.

7173. (*President.*) You are one of the first class clerks in the War Office, are you not ?—Yes.

7174. The purveying department has been under you for some time ?—Yes, the management of that branch of the hospital service.

7175. In what year was it proposed to abolish the purveying system ?—Between 1830 and 1833.

7176. Was that ever carried into effect ?—Not entirely. A certain number of officers of the department were retained under the title of deputy purveyors, with the intention of not filling up their vacancies when they should retire or die. They remained with that purpose, but before that object was attained it was determined that the system should be slightly extended.

7177. In what year ?—About the year 1845 or 1846.

7178. (*Sir H. K. Storks.*) Where were those that were retained stationed ?—At Chatham, Devonport, Dublin, and Cork ; Portsmouth was under the Devonport purveyor.

7179. (*President.*) In 1853 the purveying system was completely restored, was it not ?—Yes. Between those dates 1833 and 1853, we had added to the purveyors all the regiments at home, making them at the head of districts instead of purely at the head of hospitals. It was found in 1853 that the whole of the force at home was under the system of purveyors, under the title of deputy purveyors, and it was therefore determined to recognize the department as an existing department of the army.

7180. What was the cause of the restoration of the department ; with what view was it done ?—Partly for the purpose of relieving the surgeons of direct financial responsibilities, and partly to give a more close control of the accounts.

7181. It was wished to give to the medical officers more uninterrupted time for purely professional duties ?—Yes.

7182. (*Sir H. K. Storks.*) Also with regard to supplying the hospitals ?—Yes ; the supplies were taken away from them at the same time with the accounts.

7183. (*President.*) Was it found under the old system, from the supply getting into the hands of the hospital surgeons, peculation had taken place ?—Yes ; in one regiment two serjeants volunteered to turn informers.

7184. These observations apply to Great Britain and Ireland only ?—Yes.

7185. In 1856 the system was extended to the colonies, was it not ?—Between 1853 and 1856 the war occurred, which caused us to add largely to the number of officers. At the late peace in 1856 it was to be decided whether those officers should be reduced or be kept up as a future nucleus of the purveying department ; and Lord Panmure decided that the system should be extended to the colonies, and that we should have purveyors throughout the army, so that a school should then exist for the future service of the army.

7186. Had there been any cases of frauds in the colonies in the interval ?—There were cases of irregularity, I think, in Canada ; the prineipal medical officer there and also at Corfu, Dr. Barry, complained, particularly in the militia regiments, who were not so well acquainted with our system, that there had been irregularities.

7187. At present the purveying system is extended over all the colonies as well as at home ?—Yes.

7188. (*Sir T. M. Phillips.*) Is it a branch of the commissariat ?—No ; in no way.

7189. (*President.*) The rates of pay are lower, are they not ?—Yes.

7190. (*Sir T. Phillips.*) Would any benefits accrue from the purveying department being amalgamated in any shape with the commissariat department, or carried out as a branch of it ?—I am not aware of any. It would be throwing a large and novel class of duties upon the commissariat, which would not probably be attended with such a careful discharge of them. I suppose that the commissariat in foreign countries must always provide meat and bread, and it would not do for the purveyor to go into the market to compete with the commissariat for provisions.

7191. He should not bid against them, but side by side with them. But he would hardly have the means of bringing up his provisions ?—That depends upon whether he had his own transport as well as the commissariat.

7192. Could you provide conveniently the machinery that would be required, not so much for obtaining provisions as for bringing them up for use. Could you have that separate for the purveying department as for the commissariat ?—I see no difficulty in it.

7193. (*President.*) You had it practically so in the late war. All the medical comforts were obtained by the purveyor ?—Yes.

7194. (*Sir H. K. Storks.*) The contracts were made by the commissariat, were they not ?—Yes.

7195. (*Mr. J. R. Martin.*) What are the advantages of having one department for the supply of meat and bread, and another department for the supply of groceries and medical comforts, and such matters, when one department might do all ?—I do not think that the fact of its being all the supplying of provisions makes it all cognate, and that the commissariat, who is charged with the daily provision for 95 per cent. of the army effectives, should be charged with the special provision for 5 per cent. sick.

7196. But the purveyor is only the commissary of the hospital ?—Yes, certainly.

7197. (*President.*) In England now the purveyor supplies the hospital with the bread and meat ration, as well ?—Yes ; he can employ the contractor of the regiment.

7198. When the war broke out the difference was that the commissariat made the contract, but the article was delivered direct to the purveyor ?—Yes, direct.

7199. (*Mr. J. R. Martin.*) So that within the United Kingdom the purveyor is the commissary of the hospital ?—Yes, everywhere.

7200. When he goes abroad to a colony he becomes simply a receiver of the meat and bread from the commissariat, and a distributor of minor articles ?—Yes.

7201. (*President.*) Is it the same in peace as in war, in the colonies ?—The extension of the purveyor's department to foreign colonies has only taken place within the last few months.

7202. In point of fact, where the commissariat and the purveyor do compete, they do not compete for the

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same article, for the meat for the hospital is better than that for the men?—Yes; the medical officer would not be content with the average ration.

7203. (*Sir T. Phillips.*) But the purveyor is supplied by the commissariat?—Yes; but I believe the purveyor can give a higher price for a superior article.

7204. Still the hand providing it is the commissary; he supplies the purveyor. Take for example clothing; suppose that the purveyor needs clothing for the men in the hospital, how would he provide it? would he go to the commissariat for it?—Clothing is never supplied by the commissariat, but by the quarter-master-general.

7205. (*Mr. J. R. Martin.*) What reasons were assigned in 1830 as constituting a ground for the abolition of the purveying department?—From 1830 to 1833 the force in England was reduced very low, and at that time there was little beyond the regimental system, which was not included in the purveyor's department, and it was considered that the department was more bulky than the special demands of the service required.

7206. (*President.*) It was to save the pay of so many officers that the reduction was made, was it not?—Yes.

7207. (*Mr. J. R. Martin.*) On the other hand, does not the employment of purveyors so largely in the supply of hospitals during peace deprive the commissariat of that exercise of their functions which is so necessary on the breaking out of war?—No, I think not. It requires as much tact to provide for 95 men as for 100.

7208. Was not the commissariat establishment very much reduced on the return of peace?—Yes; but not because they had not to provide that 5 per cent. of bread and meat; yet the duties of the purveyor, which extend to so many other articles, are sufficient to justify the appointment of an officer for that department.

7209. It has been stated that on the peace the commissariat department was very much reduced?—No doubt.

7210. How long has the purveyor's department existed in the British army?—I cannot state.

7211. They are the successors of the Suttlers of old, are they not?—I should have thought that the commissariat were their successors.

7212. (*President.*) The purveyor's department existed, did it not, in the Peninsula?—Yes.

7213. Could you put in a paper to show the number of purveyors and their rates of pay?—Yes. I will lay before the Commissioners a copy of the Royal Warrant of the 31st of October 1855, by which the rates of pay were settled. (*See Appendix No.* XX.)

7214. Does the warrant say what number should be employed?—No, it does not, but I will furnish a statement showing the numbers actually employed. [The number of purveyors on full-pay in July 1857 was, at home, 14 purveyors, 10 first-class clerks, 16 second-class clerks, 14 extra clerks; total 54. Abroad, 15 purveyors, 31 first-class and 33 second-class clerks; total 79.]

The witness withdrew.

R. C. Kirby, Esq.

RICHARD CHARLES KIRBY, Esq., examined.

7215. (*President.*) I believe you are the chief examiner of accounts?—I am now accountant-general to the army, late chief examiner.

7216. Do you think that if the two stoppages, that is, the commissariat stoppage for bread and meat and the regimental stoppage for messing were combined in one fixed stoppage, and made uniform all over the world, and the commissariat undertook to supply the whole ration, including vegetables, tea, coffee, and every thing necessary for three meals, that arrangement would save much trouble in the accounts in the regiments, and afterwards in the examination of the accounts in their audit at the War Office?—Undoubtedly.

7217. Have you considered the question at all?—Yes. It has been lately very much discussed in the branch of the office to which I belong.

7218. How would that diminish the accounts in the regiments?—The simplicity of one rate of stoppage instead of two would be a great advantage.

7219. There would be a net balance of pay due to all the men at all times?—Yes, the same.

7220. With the exception of the case when a man had good conduct pay?—Yes. The regular course is to credit his gross pay, and debit the stoppage, if any. Sometimes he might be in a situation not to draw rations, for instance when a marrried man.

7221. (*Mr. J. R. Martin.*) You would have the system apply to peace as well as to war, would you not?—Undoubtedly.

7222. (*Sir T. Phillips.*) Might not you have a list of the men to whom rations were given, and a list of those to whom they were not given, so as to make it simply a calculation of so much per day in each case?—Yes, and the reason why there is a variation against the name.

7223. (*President.*) Should you contemplate making this change, keeping a difference between the stoppage abroad and at home of one penny to compensate for the different pay at home and abroad, or would you add the penny for beer money to the pay abroad, and have the same stoppage in both cases?—I would give the same rate of pay abroad as at home.

7224. The net balance would always be the same in either case?—Yes.

7225. Is there not a danger, if you raise the nominal pay abroad, of raising the amount of stoppage in the same degree, and of there being discontent among the men in very cheap colonies where the articles supplied would hardly cost the full amount of the nominal stoppage?—We should be very cautious not to increase the stoppage beyond the real cost to the public.

7226. But the stoppage in some colonies might be above the cost?—I take it that the present rate of stoppage is according to the cost in the cheapest colonies.

7227. In the bread and meat stoppage there is a dead loss to the government, is there not?—There is so, according to existing prices.

7228. Would there be the same simplification in the War Department as in the regimental accounts if the stoppage were made as is suggested?—There would be greater simplicity and a great saving of labour.

7229. That is to you as examining the accounts and bills, and to the board of audit in auditing them?—Yes; both operations are done in the War Office.

7230. You have a perpetual audit going on?—Yes. There is none by the audit board at all, except by what is called the local auditor, who does not go into those details.

7231. He is always following the accounts as fast as you can finish the examination?—Yes; his principal object is to see that the charges are carried to debit of the right votes.

7232. Have you ever known an officer's balance of pay withheld from the company's accounts as the stoppages could not be settled?—I have not known such a case.

7233. It does not produce that amount of delay?—No.

7234. In the late war you got over the difficulty, you cut the knot and made an arbitrary settlement?—Yes. It was found that the rule of a monthly settlement between the commissary and paymaster could

not be strictly carried out; it was too complicated from the men being thrown at times into such situations as neither party was acquainted with.

7235. (*Mr. J. R. Martin.*) You think that such a state of things ought not to occur again ?—I cannot say how far the exigencies of war might make them unavoidable ; accounts are necessarily obliged to yield to service.

7236. (*President.*) If you had a uniform stoppage at all times, your accounts would be extremely simplified ?—Yes ; for example, when a man embarked or disembarked we should not be interested in the date, because his stoppage would be the same.

7237. (*Mr. J. R. Martin.*) The difficulty in the late war occurred from the commissariat being able to supply some things and not others, and a large balance in money was due to the soldier when articles were not supplied ?—I apprehend that he was generally charged with the stoppage whatever the irregularities in supplying the rations.

7238. It has been stated that the complication of accounts caused great dissatisfaction to the soldiers ?—This is very probable.

7239. (*Sir T. Phillips.*) Did the stoppage from the soldier go as credit to the commissariat account at all ?—No, not after the rule was altered as regarded regiments in the Crimea.

7240. The commissary is paid the amount of the disbursements, the stoppages form no part of his statement of account ?—No, under the altered arrangement the stoppages were credited in the regimental accounts.

The witness withdrew.

Dr. Andrew Smith further examined.

7241. (*President.*) Do you consider that the number of medical officers which was allowed previously to the war was sufficient to supply the medical attendants required by the army, and at the same time permit the medical officers to receive a fair amount of leave ?—No ; it was much below what was required.

7242. Is the number allowed now greater than before the war ?—Yes.

7243. Has that been done by an addition to the regiments at home, or by an addition to the staff ?—By both.

7244. Formerly each regiment that was abroad had two assistant-surgeons ?—Yes.

7245. And at home only one ?—Yes.

7246. What is the system at present ?—There are two everywhere.

7247. Is that in your opinion a good arrangement ?—Yes.

7248. Would it not, in ordinary times, leave hardly work enough to do for three medical men in one regiment ?—No. In consequence of the minié practice being now so common, one medical officer is required almost entirely for it ; and if we have not one to spare we have to hire a civilian.

7249. It has been stated, that in the Guards two assistant-surgeons to a battalion are found to be too much, that they rather interfere with one another, and there is not work enough to keep them both well employed ?—I should say that is not the case with regiments of the line. There are so many duties to be performed. Since the arrangement that has lately been made, of having divisions, the men have been more together than formerly, and perhaps by and bye that will be the case ; but almost every regiment sends out detachments, one or two, and in that case a medical officer must go with them.

7250. Would not that object have been attained by maintaining a reserve of officers on the staff to take charge of any regiment when the assistant-surgeon was on leave ?—Yes ; that I considered first, and after taking every point into consideration, I thought the best way would be, to attach the officers to the regiments, and if it became necessary to have an additional number of assistant-surgeons employed, then take away some from the regiments.

7251. (*Mr. J. R. Martin.*) Meanwhile they would be better employed there than anywhere else ?—Yes.

7252. (*President.*) Is not there this disadvantage in having so large a number of assistant-surgeons, that you increase the disparity between the number in the lower ranks and those in the upper ranks, and so have a difficulty in providing for so many officers by promotion ?—You require a certain number of juniors.

7253. You would not have maintained as extra staff one man for every regiment at home ; you would only have to send a man to a regiment when the assistant-surgeon was on leave ?—There is one thing that we avoid now in consequence of having two assistant-surgeons to each regiment abroad, we do not require to take one from each regiment. They are not required to be employed at home. We used always to have an assistant-surgeon at home belonging to a regiment abroad, doing duty at the depôt, now we do not require that.

7254. Who serves the depôt ?—Staff medical officers.

7255. Practically, are the numbers, in proportion to the strength, about the same as before the war ?—Yes.

7256. Could you furnish a return of the whole number employed before and after the war ?—Yes. They were as follows :—

Before the late War with Russia—	
Inspectors-general of hospitals	5
Deputy inspectors-general	8
Staff surgeons, 1st class	31
Staff surgeons, 2nd class	49
Staff assistant-surgeons	83
Apothecaries	4
Dispensers	0
Regimental surgeons	140
Ditto assistant-surgeons	226
Total	546

This is exclusive of the Medical Officers of Royal Artillery, consisting of—

Inspector-general	1
Deputy inspector-general	1
Senior surgeons	6
Surgeons	13
Assistant-surgeons	26
	47
Making a general total of	593

The Numbers employed after the late War with Russia were—

Inspectors-general of hospitals	6
Deputy inspectors-general	17
Staff surgeons, 1st class	30
Staff surgeons, 2nd class	70
Staff assistant-surgeons	138
Apothecaries	6
Dispensers	20
Regimental surgeons	145
Ditto assistant-surgeons	254
Total	686

To these must be added the Medical Officers of the Royal Artillery, consisting of—

Deputy inspector-general -	1
Senior surgeons - - -	4
Surgeons - - - -	17
Assistant-surgeons - - -	45
	67
Making a general total of -	753

7257. (*Sir H. K. Storks.*) The regimental medical officer has many out-of-door duties to attend to, has he not?—Yes; I consider that half their duties are out of doors, such as attending the sick women and children, going through the barracks, and so on.

7258. (*President.*) The number must be greater now than before the war?—Yes; before the war the number was not sufficient.

7259. Is the number greater in proportion to the strength?—Yes; I think the number is greater in proportion to the strength.

7260. Is it sufficient now?—I think so.

7261. What amount of leave do you grant to an assistant-surgeon?—I think it is six weeks or two months in a year.

7262. (*Mr. J. R. Martin.*) When you say the present number is sufficient, you mean sufficient for peace purposes?—Exactly.

7263. (*President.*) How are the officers of the medical department now generally distributed?—They are distributed partly as regimental medical officers and partly as staff. The total number of the officers belonging to the medical department is 727; of those about 440 belong to regiments.

7264. That includes surgeons and assistant-surgeon?—Yes; the remainder belong to the staff; then a certain proportion of the staff medical officers are senior officers, serving on foreign stations, and also on home stations, as principal medical officers; a certain number of the staff surgeons are doing executive duties, the remainder of the staff surgeons, and second class assistant-surgeons, are distributed according to the wants of the service.

7265. What number is employed in your office?—The office establishment consists of one deputy-inspector, as professional assistant, one staff surgeon of the second class, one apothecary, and one dispenser of medicine; that is the regular establishment.

7266. What is the use of the apothecary and dispenser of medicines?—They have to furnish all the medicines required for the different foreign stations, and for all regiments at home.

7267. Is the number sufficient for the purposes of your office?—Decidedly not; there is a constant pressure, such a constant pressure as almost prevents the possibility of doing anything correctly. At the present moment there is one staff surgeon of the first class, who is employed in purveying duties.

7268. What are those duties?—To attend to all requisitions coming from surgeons wanting extra articles, as hospital stores, &c.; he has to report whether it appears to him that these things are necessary, and then I have to apply to the War Office, whether it be for foreign or home stations.

7269. Do the requisitions for bedding always come through you?—Yes, when they are refused by the local authorities on the spot.

7270. Are they only refused by the local authority on the spot, when he has not got the article in store?—No; he will not issue the article that is wanted, because he says the sick must use the old, till they are perfectly useless; for instance, white sheets, which it is so desirable to obtain, there may be a great quantity in possession of the barrack storekeeper, yet he will not issue them till the old brown ones are useless.

7271. Those would be perfectly applicable for barrack use?—That is what I have proposed over and over again, and so withdraw them from the hospitals. In some cases that has been done, and in others not.

7272. There are officers who, though nominally in excess in your establishments, must become permanent officers?—Yes; they must necessarily become permanent if a statistical department be sanctioned, and the purveying department be constituted, as it once was, a portion of the medical department.

7273. Then the army statistics, which are now compiled by Sir Alexander Tulloch and Dr. Balfour, would be compiled in your office?—Yes.

7274. Would you have strength enough to do that?—Yes; if the present establishment were continued we could do it; I want to retain that. I have four over the office establishment at present.

7275. Do you think, if you got rid of the temporary pressure created by the work in which you have been engaged relative to the sickness in the army in the East, that with that strength you could carry on permanently the statistics of the army?—Yes; if I were allowed a second senior officer for my office, to act as president of a statistical board, and make the prescribed periodical inspections of the general, regimental, and detachment hospitals. Until August 1854 an inspectorial officer was allowed, and during the many months he was not engaged in making inspections, he was occupied in my office in examining statistical returns and annual reports.

7276. How are the inspections of the hospitals carried on?—Partly by Dr. Dumbreck; but it is almost impossible to do it.

7277. Are you able to send Dr. Dumbreck to Ireland?—No; the regulation is that the inspector-general in Ireland shall inspect the hospitals there.

7278. Has the inspector-general inspecting officers under him, or does he inspect himself?—He inspects himself. When Dr. Forrest was here, and before he went to Gibraltar, I sent him round Great Britain to make the inspections; he was engaged in that duty for two months; afterwards he proceeded to his present station.

7279. Have you any person engaged in examining the medical registers?—No. The medical registers do not come to my office; they go to Chatham, where they are examined, and are reported on from Chatham to me.

7280. If you had a statistical department you would endeavour to make extracts, and publish accounts of the state of the health of the army, and its diseases?—Yes. That would be one of the duties of a statistical department. Then the whole of the documents ought to be in my office instead of at Chatham.

7281. But at Chatham they would be required for the purpose of the invaliding?—No, because all the invaliding documents come direct from the regiment. No register is sent to Chatham till they are no longer required at the regiment. They must keep with every regiment the registers for two years; after which they are sent to Chatham.

7282. When you want to trace out the history of a man's case, you refer back to the medical register of his regiment for some years, do you not?—Yes.

7283. Would it not be necessary to do that on the spot, say at Netley?—It could be done here. The great advantage would be in having the whole of those records in the central office.

7284. (*Sir James Clark.*) What is the object of sending them to Chatham?—We have not room for them here.

7285. (*Mr. J. R. Martin.*) In number what did the medical officers amount to during the war?—I suppose about 150 more than now.

7286. (*President.*) Is the rank of the officers in your office sufficient?—No; I think the two senior officers next to myself ought to be inspectors-general.

7287. Not deputy-inspectors?—No.

7288. Have you no inspector-general?—No, I have only one deputy-inspector and a staff surgeon of the first class. I think I ought to have two inspectors-general. I think that the officer who is in the habit of making

annual or other inspections should be an inspector-general, in order to give him weight both with the military authorities, and also with the medical officers. He would be so much senior to them that they would attend to any observations from him sooner than from a junior officer.

7289. You would have two inspectors-general, one of whom would be an inspectorial officer, to inspect hospitals in England and Scotland, and the other should be employed as the head of the statistical department ?—I would have one as my assistant, to aid me in replying to the very numerous questions submitted for my opinion or decision, and likewise to act as president of all boards ordered on sick and wounded officers; the other to make the required periodical inspections of hospitals and superintend the statistical department.

7290. Would you make any division of duties, putting sanitary duties into his hand specially ?—Yes, clearly.

7291. You would want two inspections of hospitals, one which referred to personal hygiene, and the medical treatment of the patients, and another with respect to the sanitary condition of the buildings, barracks, and hospitals ?—Yes; but the officer employed ought to possess the requisite knowledge to enable him to do all that.

7292. (*Sir James Clark.*) Do you inspect barracks as regularly as hospitals ?—Yes. They are reported upon equally.

7293. (*President.*) Are reports made on barracks, with reference to ventilation, and so on ?—Yes, on the drainage of barracks, on surface drainage, and ventilation, whether crowded or not, and on every circumstance that can be supposed to be unfavourable to the health of the soldier.

7294. Can you furnish the commission with a sketch in writing, showing how you think your office ought to be constituted, what ought to be the rank of the officers, and the respective duties of each ?—Yes. (*See Appendix No.* XIX.)

7295. And the rates of pay ?—Yes.

7296. Do they receive any pay in addition to the substantive pay of their ranks ?—No. Medical officers are the only officers who receive no addition when they are employed on staff duty.

7297. Do they receive lodging money ?—Yes; they receive according to their rank. A deputy-inspector gets 31*s.* 6*d.*; a staff surgeon of the 1st class 26*s.*; a staff surgeon of the 2d class 21*s.*; and a staff assistant-surgeon 14*s.* a week to provide lodgings in London, which is not at all enough for the purpose, and they receive 1*s.* a day servant's allowance.

7298. They cannot get a servant for that ?—No, nor for twice that amount.

7299. Nor can they get a lodging for 10*s.* a week ?—No. They receive the same lodging money when they are in London, which is expensive, as in a station where they could get a lodging for 10*s.* All the military departments are allowed something extra when they are employed in office duties, such as the adjutant-general's office, and the quartermaster-general's office; but the medical officers receive nothing but their substantive pay.

7300. (*Sir H. K. Storks.*) But the officers who are employed in the departments to which you have referred are half-pay officers; a medical officer receives the full-pay of his rank ?—Yes; but the deputy adjutant-general gets 19*s.* a day office pay.

7301. You are talking of the head-quarter's office ?—Yes, in London, which makes his position much better than that of the deputy-inspector in my office.

7302. How much does he receive ?—He gets 30*s.* a day; that includes everything.

7303. (*President.*) Does that cover the lodging money ?—No.

7304. (*Sir H. K. Storks.*) Then he receives more than the assistant adjutant-general at head quarters ?—Yes; but the latter gets an allowance for several horses.

7305. (*President.*) What number of medical men are required annually to supply the vacancies which arise in the army medical department ?—I have a document here which shows the number admitted during five years. In 1848 there were 33, in 1849 there were 21, in 1850 the number was 20, in 1851, 46, and in 1852, 40, so that the average was about 32. (*See Appendix No.* VII.)

7306. Now that your establishment is increased you have rather more ?—Yes, not a great number more, perhaps two more.

7307. Did you find any difficulty before the late war in obtaining the number of young men properly educated which was required ?—None.

7308. Did you find any difficulty during the war ?—Great difficulty.

7309. Have you required many since the war ?—Yes, a good number.

7310. Have you not reduced a good many since the war ?—No, assistant-surgeons; we have reduced acting assistant-surgeons.

7311. Should you have any difficulty now in procuring candidates ?—It would be impossible.

7312. Was it wise to reduce all those acting assistant-surgeons, and be obliged to take fresh men into the service ?—We have given an opportunity to every one who is eligible on account of age to compete, with the view of being restored to the service.

7313. Did they generally accept the offer ?—Almost every one who was not above the age; some were 32, the limit of age is 25.

7314. (*Mr. A. S. Stafford.*) Have you represented officially the difficulty or the impossibility of procuring a sufficient number of young men to join the military medical department ?—Yes. I have represented it to Lord Panmure.

7315. (*President.*) Do you find great difficulty now ?—Yes, great difficulty. I want about 34, and I had only on the 16th of the last month nine applicants.

7316. Do not you think that men hang back, understanding that there is likely to be a change, and wishing to see what it will be ?—I think it is possible, but I think also that there are not many unemployed.

7317. You stated, I think, before, that the East India Company found no such difficulty ?—They have not a difficulty, but they have not the number of candidates I should have expected. I asked Dr. Scott the other day, knowing that their examination was close at hand, and I found that they had not got quite double the number of candidates, as compared with the appointments that are to be given.

7318. Still they have more than you ?—Yes, they have. For 17 or 19 appointments I was told there were 30 applicants.

7319. Would you not say that among medical students the service of the East India Company, owing to its emoluments, is preferred ?—No question of it.

7320. I see in the minute of Lord Dalhousie, that he argues for a change in the rates of pay and position in the East India Company's medical service, and he grounds that upon the statement that the superior advantages of the Queen's service draws the best candidates away from the East India Company's service ?—I cannot reconcile that with what I know. It has been the same with us; our officers have been for months and months past saying that from the pay allowed to the army medical officers not being sufficient, we did not get the best men. I do not admit that; I think we got a very fair class of men up to the time when the East India Company threw their appointments open to competition. Then we ceased to get the best men, and if our department is not improved now, we shall get an inferior class of men.

7321. Do you not think that Lord Dalhousie's opinion may have been influenced by the fact that during the war there was greater attraction to the Queen's service than to the East India Company's ?—I think it is very possible.

7322. And that the Queen's service absorbed almost all the available students ?—Yes, no doubt of it. Several gentlemen applied to me to enter the medical

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service of the army with the understanding that they were to leave as soon as the war was over to go to the East India Company's service.

7323. You say you have great difficulty in obtaining candidates, how do you account for that ?—I think it arises from two reasons; first, there is no great number of medical men unoccupied, and secondly, there has not been the same production of medical men in the last ten years as before ; there are not medical men in the market.

7324. Is not the demand for them much greater from the increase of population and the increase of wealth ?—Yes. The present medical men are all more or less employed, perhaps better employed than they would be in the army ; and I have no doubt also that to a certain limited extent they hope, by pursuing this course, to compel the government to increase the pay.

7325. Did not Sir Benjamin Brodie say that he never advised a pupil to enter the army medical service, as he would do better elsewhere ?—Yes, and I should say the same thing if he were a well-informed, active young medical man; I think he would do better elsewhere.

7326. The governing bodies of the royal colleges and universities of England, Ireland, and Scotland have taken into consideration the pay and advantages of the Queen's service, and have made a statement, have they not, that they are insufficient to attract good students from their schools ?—I believe so ; but I felt myself so situated with regard to that movement, that I did not feel that I could make myself master of what was doing, so I declined to receive any communications.

7327. (*Mr. J. R. Martin.*) Do not you conceive that there are other circumstances besides the low rate of pay which deter medical officers from entering the British army, such as the rank not being substantive ?—No, I do not think they think much about that ; I do not think they know much about it.

7328. And the small distribution of honorary rank ? —That has more influence upon those who are in the department, not upon those who are not in it.

7329. Is it possible for the government to attach educated men to the public service by money rewards alone ?—I think so, if you gave liberal pay, whether you gave them honorary distinction or not. I think the majority of men would come for a good salary.

7330. Would such a consideration alone influence the military officers in the line ?—No. They go as fighting men to acquire fame, but it would also very much influence them.

7331. Would it be considered a sufficient inducement *per se?*—Perhaps it would, if you made the salary large.

7332. In all professions, are not honorary distinctions looked to as well as emoluments ?—No doubt about it.

7333. (*President.*) Have you seen a statement that was made by Mr. Rees ?—Yes, I saw it at the time.

7334. He states : "If I think a young man is a "promising young man, I recommend him to stay at "home, and not to go into the army. I feel that he "can get a living by his profession here that would "remunerate him better ?" — I quite agree with him.

7335. What steps would you recommend to remove the difficulty you are now experiencing in obtaining young men for the army medical service ?—I would increase the rate of pay, and give other advantages which I have pointed out in my memorandum to Lord Panmure, dated 29th October 1855.

Adjourned to Monday next at One o'clock.

Monday, 6th July 1857.

PRESENT :

Right Hon. Sidney Herbert, M.P.	Sir Thomas Phillips.
A. S. Stafford, Esq., M.P.	Sir James Clark, Bart.
Sir H. K. Storks, K.C.B.	J. R. Martin, Esq., F.R.S.
Dr. Andrew Smith.	Dr. John Sutherland.
T. Alexander, Esq., C.B.	

President, The Right Honourable SIDNEY HERBERT, M.P.

Dr. A. Smith.

Dr. Andrew Smith further examined.

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7336. (*President.*) At the end of your examination on Friday you stated that you had found great difficulties in procuring candidates for the army service, and that one of the main reasons was the want of sufficient remuneration, the present remuneration being unsatisfactory. Will you state now the rates of pay which the officers of the different grades at present receive ?—I will hand in this document.—(*The same was handed in. See Appendix.*)

7337. Do you contemplate a change of the rates of pay throughout the different ranks ?—In the memorandum that I furnished to Lord Panmure I did. I think that was in November 1856.

7338. The largest change, I believe, is to be in the pay of the assistant-surgeons ?—I should doubt that ; there are larger changes than that in the pay of the inspectors-general.

7339. You propose to raise the pay of the assistant-surgeon from 7*s.* 6*d.* to 10*s.* ?—Yes.

7340. Will you state the changes upwards which you propose to make ?—I propose to give the assistant-surgeons on appointment 10*s.*—they have now 7*s.* 6*d.* —and after 10 years' service 13*s.* instead of 10*s.*

7341. But, practically, the assistant-surgeons being promoted by seniority, never serve so long as 20 years, do they ?—They used to do so in old times, but not lately, not for many years.

7342. They used to serve as long in the old times, when the promotion was by selection ?—When it was by seniority. After the peninsular war, there were some who had served as long as 28 years as assistant-surgeons.

7343. The vacancies above them being filled from the half-pay list ?—Yes.

7344. But within your time as director-general the service has averaged 12 years ?—Certainly.

7345. For that reason you do not propose to augment the pay after 20 years ; but you would leave it at the same rate as now ?—I take for granted that there will be no assistant-surgeons having over 20 years' service.

7346. In the regimental surgeons and staff surgeons of the second class, what change do you propose to make ?—On appointment 15*s.*, after 10 years' total service 1*l.*, and after 20, 1*l.* 5*s.*

7347. Not on the staff?—Yes, a staff surgeon of the second class the same; after 20 years' service 1*l.* 5*s.* as regimental or staff surgeon of the second class.

7348. After 25 years' service do you propose any change ?—No.

7349. In the Appendix to Mr. Stafford's committee, I see that you state the rates of pay for a surgeon after 10 years' total service; you do not mean to include service in the rank of assistant-surgeon as well ?—Yes; I meant to include the total service in the army.

7350. For total service there it should be full-pay service in his rank ?—No; full-pay service in the army.

7351. Are the Commissioners to understand that in all those cases you speak of the full-pay of the service alone ?—Yes; the half-pay of the service never counts.

7352. In the pay of the staff surgeons of the first class what change do you contemplate ?—On appointment 1*l.* 5*s.*, and after 20 years' service in that rank 1*l.* 8*s.*, and after 25 years, 30*s.*

7353. You do not mean 20 years' service in that rank ?—No: total service.

7354. You adhere to the same rates of pay that you proposed in the Appendix to Mr. Stafford's committee ?—Yes.

7355. In the other ranks, when you speak of service, do you mean total service in the army ?—Yes.

7356. You think it right that the pay should depend, not upon a man's rank, but the number of years that he has served ?—Yes; it is the only way of apportioning the pay fairly, taking the number of years he has served.

7357. After 25 years' service what do you propose ?—1*l.* 10*s.*

7358. Then what do you propose should be the pay of the deputy inspectors ?—On appointment 1*l.* 10*s.*, instead of 1*l.* 4*s.*, and after 25 years' total service 2*l.*, with no increase.

7359. But that should be final ?—Yes.

7360. Then what do you propose for the inspector-generals ?—On appointment 3*l.*, with no increase.

7361. That is double the present amount, is it not ?—It is 1*l.* more; 2*l.* is their present full-pay, and I propose that it shall be 3*l.*, with no advance.

7362. Do you think it is wise to make the intervals between which the rise of pay shall take place so long as 10 years. Would it not be better, keeping the same financial proportions over the whole rank, to make the change more frequently, say once in five years ?—I do not see any objection to that, only it would cause a good deal of writing in making out the various returns that would be required to verify the services of men.

7363. (*Sir T. Phillips.*) Surely five years is a fair period of service after which to receive an advance ?—I see no objection to it myself.

7364. (*President.*) I suppose you have made a calculation that the total cost shall not exceed a certain amount ?—I have not.

7365. What duties attach to the officers of each grade ?—All the administrative officers are generally appointed as inspectorial officers to small and large stations; there are two classes of duties for staff surgeons of the first class, one executive, the other administrative. At Chatham they treat patients and do ward duties. All the other staff surgeons of the first class are employed as administrative officers on small foreign stations, and also on stations at home. Besides these there are six or seven employed as inspectors of recruits in the recruiting districts; but there they do not perform admistrative duties; there are eight really not doing administrative duties, two at Chatham, and six in districts.

7366. You consider those who inspect recruits to be performing executive duties, but of the lowest class ?—No.

7367. But you cannot put the examination of a recruit upon a par with the treatment of disease ?—No; but still I should not like to have it recorded that I considered it an inferior duty.

7368. Would you consider that a man coming from five years' inspection of recruits would be equal to a medical man who came from five years' work in a hospital ?—No, very likely not; but we must consider that a staff surgeon inspecting recruits in a district has all the medical duties and executive duties attaching to his position, such as attendance on all sick recruits, and all the staff, therefore he has a certain amount of executive duty, but not at all equal to the staff surgeons at Chatham.

7369. Will you explain the other duties; I understand that the first-class staff surgeon is an inspectorial officer, except at Chatham, and where he is employed on the recruiting service ?—Yes; the staff surgeon of the second class and the regimental surgeon are both executive officers, the regimental surgeon treating the sick of the regiment, and the staff surgeon of the second class treating the sick of the detachment to which he may be attached.

7370. Was the object of those who first instituted the rank of first-class staff surgeon to make it an administrative or an inspectorial rank, or executive rank ?—Administrative rank.

7371. Was it not stated at the time that there was so great a disproportion between the inspectorial and the executive ranks, that therefore the first-class staff surgeons ought to be created in order to increase the executive force ?—Not that I am aware of. They found a difficulty in managing the physicians to the forces, and the assistant-inspectors, as they assumed to themselves, from their titles, being called physicians, a claim to do nothing but physicians' duty; which was found to be exceedingly troublesome, particularly in the Peninsula; and therefore, when an opportunity occurred of revising the different grades of the department, it was proposed to substitute for those two ranks the staff surgeon of the first class, and make him a lower rate of administrative officer.

7372. Do you think that the rank of first-class staff-surgeon has worked well ?—I have no reason to say that it has not.

7373. Is that one of the ranks to which you propose to promote by selection or by seniority from the regimental and second-class staff surgeons ?—In one or two instances I have promoted to that rank by selection, but generally speaking I do it by seniority.

7374. You have stated before Mr. Stafford's committee that they were taken by seniority?—Certainly, in the case of a very good officer, but a regimental surgeon I have occasionally selected for the first class, still I am always afraid that I may do injustice, from not exactly knowing a man's full powers; hence I have generally tried to take the senior.

7375. You promote to the ranks above that of first class entirely by selection ?—No; I think entirely by seniority.

7376. Do you make deputy inspectors by seniority?—Yes; I hold that in the case of an officer who is qualified to take upon him administrative duties, the chances are that he will be able for the higher ranks; there is no very great difference in regard of their duties; therefore I would say, that if a man is selected from the regimental surgeons, on account of his qualifications being considered sufficient to qualify him for an administrative officer of the lower grade, there is every certainty that he will be equally eligible for the grade of inspector-general; and in order to prevent dissatisfaction among the upper ranks, after a man once gets to be made a staff surgeon of the first class, I would promote entirely by seniority to the remaining upper classes, unless it could be proved that an officer had got appointed to the administrative department who was really unfit for it.

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7377. Before Mr. Stafford's committee you were asked, "What is the general rule in recommending "an assistant-surgeon to be made a full surgeon?" and your answer is, "The senior is promoted inva- "riably, unless there is anything in the senior that "renders it improper that he should be advanced." You are also asked, "Have you observed that rule "also in other cases of promotion in the higher "ranks?" and your answer is, "No; the established "rule with regard to them is selection?"—That is correct; the established rule is selection, but I have been afraid to exercise that selection, and I have generally gone myself by seniority; still the rule is selection, and it was so stated by Sir James Macgrigor to the military commission of 1840.

7378. But you are in the habit of promoting, as a rule, the assistant-surgeon to be surgeon by seniority?—That is invariable, and I find no difficulty in doing it.

7379. I thought, speaking broadly, that the rule was this, that in the executive ranks promotion went by seniority, and to the administrative ranks it went by selection?—That is the rule, but I was not asked whether I had observed that rule regularly.

7380. Practically you have found it advisable not to adhere to that, but to extend seniority to the ranks above the executive?—Very generally so, but not invariably, I find a difficulty in making a selection. I daresay I could produce, since I have been at the head of the department, three or four officers whom I have selected, and whom I had no doubt about. Generally speaking, I do not select, as I could not feel certain that I was selecting the best man.

7381. Although the qualities required for the two ranks are very distinct, that is to say, the man whom you would put over another requires to possess different qualities from the man who is to act in a subordinate capacity, still you think that you can get equally efficient men by seniority as by selection?—I think it would be well to establish a rule that for the first administrative rank you should select and have no more selection, and so take by seniority, both above and below, staff surgeons of the first class.

7382. How would it answer, do you think, if you promoted to the first class by seniority, and took everything by selection above that?—That is not what I propose. I propose that when a staff surgeon of the first class is required he should be selected from the regimental surgeons, and then, as soon as he was appointed, he should go regularly on to become an inspector-general by seniority.

7383. In that way will you not have great physical disability in the upper ranks, if you take a number of the most efficient men you can find upon the list of the deputy inspectors?—That would be an exception. If a man were unable from physical disability, he would not be promoted, but as a general rule, I think seniority is the only safe one.

7384. As it is important, whatever is the general rule, that it should be adhered to, would it not be safer to go back to the old rule, and say that the executive rank shall be taken by seniority, and the administrative rank by selection, and adhere strictly to selection, of course giving the turn to the seniors, *cæteris paribus*?—It would be the best rule for the public service.

7385. (*Mr. J. R. Martin.*) And for science?—Yes.

7386. Has it not always been found, when promotion has taken place in the public service by the rule of the muster roll, it has proved a damper on energy and enterprise?—No question of it, but I do not see the way of carrying out the other.

7387. (*President.*) What you propose practically is, an alteration of the existing rule in favour of seniority?—No; what I propose is this, that in the case of staff surgeons of the first class, the first grade of administrative officers, I think you can with safety select them, and being selected, then let them be made, according to seniority, deputy inspectors, and according to seniority from deputy-inspectors make them inspector-generals.

7388. I think you show that that is impracticable, as the men would become too old for the appointment?—No, I contemplate that you would fix a time when a man must retire.

7389. But even then the country would not give so liberal a sum for retirements as should comprise all the men who were unfit from age, and therefore you must make some selection to get the fittest men?—There are no men made deputy inspectors but those who are actually required to fill vacancies. If anything happens to a man filling a vacancy to disqualify him, he must go on half-pay, whatever that may be.

7390. Are there not great complaints made now that there are superannuated officers in the service, who are too old for the duties expected of them?—If they are inefficient, I should consider that it would be advantageous to the public service that they should retire.

7391. Then you would not promote them?—I would wish them to retire long before that. I would not have a man in the service 70 years of age.

7392. At what age do you propose that they should retire?—I propose retirement for executive officers at 50, and for administrative officers at 60 or 65, and I would compel them to retire at those ages.

7393. Have you made any calculation of the cost of the retirement of all the officers at that age?—No; but it would not be much. Few men live long after that age—after 65.

7394. (*Mr. J. R. Martin.*) Does not selection become a more easy matter in the administrative department than in the strictly professional, the medical and surgical departments?—I do not know. There is no man who believes that he is inferior to another man, and you have such a cabal formed against you, that you do not know how to meet it.

7395. Do you not find it more easy in your department to ascertain the qualities of the administrative officers than the medical and surgical qualities of regimental surgeons?—I should say, generally speaking, that I know better the qualities of the regimental surgeons, who are efficient executive officers, than I do the administrative officers, for they have little opportunity of showing whether they are good or bad, unless on such an occasion as the late war.

7396. (*President.*) But you would receive the report of a superior officer upon a regimental surgeon and a second-class staff surgeon?—The staff surgeons and others are reported upon, if there happens to be a senior medical officer on the station where they are serving.

7397. Generally speaking, staff surgeons are employed on stations which are not large enough to warrant the expense of a deputy inspector, and therefore you get no report of them?—No.

7398. (*Sir T. Phillips.*) Do you regard a staff surgeon as an administrative officer?—Yes.

7399. And you select him for his administrative qualities?—Yes, from the regimental surgeons, or staff surgeons of the second class.

7400. (*President.*) Admitting that the other is the best for the service, this is in order to get rid of the dissatisfaction and jealousies which are created by the system of selection?—Yes, that is the case.

7401. But that would be really sacrificing the interests of the service to the interests of individuals?—That is quite correct; I admit it, and if anything could be devised that would ensure the possibility of a man being fairly taken, I would say adopt selection throughout at once, but I do not see how that is to be done. From one colony the principal medical officer on one occasion reported that every one of his officers were men of great talent, though I knew that some of them were very stupid—that happened to be his way of reporting.

7402. What rank did he hold?—He was a deputy inspector-general.

7403. According to your system he would become an inspector-general?—Yes.

7404. Although clearly he was unfit for the inspector's office; was he an old man?—He was not so old, and was a very good man in other respects; but he wanted to stand, which is unfortunately too often the case, in a good position with the officers serving under him, therefore he made good reports.

7405. With regard to the lower rank, of course you would keep that strictly to promotion by seniority?—I think you must do that.

7406. There is among medical officers great discontent as to the mode in which seniority is carried out, and that I believe results from your taking seniority within a certain radius, instead of the seniority of the Army List; how does that occur?—On all stations, if a death vacancy occurs, it is filled up by an officer who is serving on the station; if it is not a death vacancy, it is filled up from the general department. That was considered desirable, because there might be a serious outbreak of yellow fever in the West Indies, and a surgeon might fall a victim to the fever, while the senior assistant-surgeon on the station might have been equally actively employed and doing excellent service, and it would be a hardship to pass him over, and bring in a man from a healthy station where he had been exposed to no disease or risk of any kind.

7407. In that case seniority would be a greater hardship than selection?—Yes, and that is the rule, in order not to injure a man who had been exposed to all the dangers, which the other would not have been.

7408. (*Mr. A. S. Stafford.*) But one man may have been present through all the sickness, and the other may have arrived only the week previously?—Yes, and he would be promoted—that is the rule; and there was another reason for it, viz., that the government is anxious not to incur too great an expense, and therefore, by promoting a man on the spot, you have not to send out a successor to the man who died; as you take an opportunity of sending a man out to supply the place of the man who is promoted, by sending him out with a detachment of troops when a medical officer is actually required to go.

7409. (*President.*) You would have the means of sending him out from England, but not from station to station?—No.

7410. (*Mr. J. R. Martin.*) In that case an assistant-surgeon might be promoted in a year?—Yes, and in less.

7411. Suppose the case of a small station, in which there is simply an assistant-surgeon, and a staff assistant-surgeon goes out this week, and the surgeon dies the next, what would take place then?—There is no station so small.

7412. What is the smallest number of medical officers that you have at any station?—I should think a dozen; the Mauritius, which is a small station, is lumped with the Cape.

7413. (*President.*) It has happened, has it not, that you have sent out a man who was senior to all on the station, except the principal medical officer, whoever it might be, and he has got a vacancy when it has occurred a few days after his arrival, superseding those who had been on the station for a long period?—I do not think that that has happened, except once, in the case of an assistant-surgeon in India, by an oversight; there are instances in which it has occurred by oversight; it has never been the practice. The only case that I know of was the case of a man in India; an old assistant-surgeon who came home, and wanted to go back again to India, he was by an oversight allowed to go back, but that was before my time,—he became first for promotion, which Sir James Macgregor and I both considered to be a hardship, and desired that it should be specially noted by the clerk, to prevent it happening again.

7414. Was there not a case in Canada, that of Mr. Rutherford?—No, I do not recollect that case, but there is a thing I should mention: suppose Mr. Rutherford had been at home, an assistant-surgeon serving at Chatham, and a vacancy occurred in Canada for an assistant-surgeon, and Mr. Rutherford had been longest at home, it would have been the duty of the director-general, according to the regulations, to send Mr. Rutherford there, whether he was likely to take the promotion from another man or not.

7415. The case I have referred to is this:—Dr. Rutherford was, I think, the senior on the station when a death vacancy occurred in the 66th; he was the senior in Canada, and he could not be promoted because the senior in Nova Scotia, which is considered a part of the same station, was senior to him, and practically a gentleman went out from England and filled the vacancy, so that neither the one nor the other got it?—I will look into that case.

7416. Have there not been other cases of assistant-surgeons not getting their promotion in strict seniority?—Not except during the war, so far as I am aware.

7417. In the Crimea there was a Mr. Holton, who served during the whole Crimean war from Bulgaria to the capture of Sebastopol, and a Mr. Ligertwood was promoted over his head. Mr. Ligertwood never did any medical duty, but acted as secretary to Sir John Hall?—That was a special appointment; it was recommended by the Commander-in-Chief, and by Sir John Hall, and authorized by the Minister for War.

7418. And such a recommendation as that you always follow?—Yes, I always do that.

7419. Did you follow all Sir William Codrington's recommendations?—No, because there were a great many, and I could not do so.

7420. If there are many you can make a selection from them yourself?—If I ask the Minister for War if he will allow me to recommend a certain number of men for promotion, and he says no at once, there is an end of it. I do not think that any of the officers recommended by Sir William Codrington were promoted. The list was a very long one, and if they had been promoted it would have placed them all on half-pay, which I thought would be a very great injury to them, and I believe they themselves shuddered at the idea when they understood what would be the consequence.

7421. I believe you have suggested to Lord Panmure some method of getting over this difficulty, by which officers from chance get promotion over the heads of others. Have you some method by which you could rectify that, and restore the men over whose heads others go to the place which they ought to occupy?—I have proposed that their commissions should be antedated.

7422. That would remove the whole difficulty?—Yes.

7423. (*Sir T. Phillips.*) May it not be that the man who has actually had promotion is the person whom you would not select, supposing you were to determine upon his claims, because he has not served the necessary time, and his special services on the station would not in themselves give him the step?—I cannot recommend a man who has not served the time; he must have served the time in one particular rank before I can recommend him.

7424. (*President.*) You might have a whole station composed of juniors, but still the senior of those juniors would get the step?—Yes, if there was an absolute necessity for immediately filling up the vacancy.

7425. Do you not think, looking at the great value of broad and intelligible rules, that a good deal of dissatisfaction as to promotion has arisen from making such minute distinctions, which the service do not understand?—I think it is very probable that there are many points which officers do not know. They think that I have been acting unfairly, when, if they knew the circumstances which I have often mentioned to them when they complained, they would have seen that I could not have acted in any other way; whether they were satisfied with the propriety of it I cannot

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say, but I never found any man that did not think that he was the best man.

7426. If you laid down two or three broad rules, and invariably adhered to them, there would be less dissatisfaction than now exists ?—Yes, if you published them. Practically I do adhere to broad rules, but they are not published.

7427. The Commander-in-Chief cannot give promotions except those which are authorized by the warrant; and therefore every officer knows exactly to what chances he is subjected; and do you not think that the medical officers are entitled to the same security ?—Yes ; but I think the medical officers have that security. They possess a good deal of knowledge; and it is not at all unfrequent for medical officers at Chatham to send word from Chatham to my office who are to be the persons to be promoted. They have given a whole string, showing what the promotions are to be, before I have thought anything about them, and generally speaking they are right.

7428. Still there ought to be something in black and white ?—Yes.

7429. That would protect you very much, as well as give satisfaction to them ?—I should like to see that.

7430. But could not you do it ?—I will try to do it; but I do not know whether it is practicable or not with the medical department, serving over such an immense territory as they do ; I do not think it is practicable to carry out one uniform system, and never to deviate.

7431. Is not this the fact, that men do not resent hardships which are inflicted upon them by regulations, but they do resent hardships which they think arise from individual caprice ?—Certainly.

7432. If you had broad rules, which sometimes, like all broad rules, would bear hard upon individuals, you would not be held responsible ?—I am not certain of that.

7433. Would not the service be more satisfactory and be as well conducted ?—I think it would ; but suppose a death vacancy to take place in Canada, the senior being at New Zealand, there would be a difficulty ; we should be in want of a surgeon for this regiment in Canada till the senior was brought from New Zealand, which would take two years.

7434. (*Mr. J. R. Martin.*) You can always have a man to do the duty *ad interim* ?—No ; I am only allowed an establishment in Canada necessary to meet the stations, and I should not have a staff surgeon of the second class, the person that ought to go and take the duty—I have no extra men. If the government were to allow an extra medical staff there would be no difficulty.

7435. (*President.*) Does not the great acceleration of communication between the different parts of the world make this system of promotion less necessary ? —It is less difficult now than some time ago, but I do not think that I could get a medical officer from New Zealand to go to Canada in less than 18 months.

7436. I can hardly imagine any case where the delay would be more than six months ?—For instance, in Canada, suppose that a surgeon dies, his case is reported to me, and I then look to see who is the senior ; that takes time. I find, for instance, that the senior is in New Zealand, and I write a letter to New Zealand requesting the principal medical officer to communicate with the general commanding, requesting that the senior shall be sent home, but the general commanding will not act upon the principal medical officer's order, nor upon mine ; I therefore find it necessary to address the Commander-in-Chief, stating my reason for wishing that this officer might be sent home, and request him to write to the general commanding out in New Zealand to order him home, and when the order reaches the general it turns out that this assistant-surgeon is serving at an out-station with which there is no direct communication, hence he may take five or six weeks to come from his out-station to the capital, and then there is no vessel immediately sailing, or if there is, the man says, "I have been so long here ; I have ground," and this, that, and the other, and he begs and urges the justice of allowing him to stay a certain time in order to settle his affairs, so that perhaps he does not leave New Zealand in less than 7 or 8 months. I know such is the case.

7437. Do you mean that a man would forfeit his promotion rather than leave his station ?—No; but he would think it only fair to be allowed a certain time to settle his affairs. I know that it has taken a month to come from Canada, and three months from here to New Zealand—that makes four months. Then when a man is ordered from his station to the capital, he requires a month if only to get rid of his property, and we cannot take for granted that a vessel just pops in and takes him away—that makes seven months—then the moment the man comes here, his first application is this: he has been so long out of England that he wants leave to go and see his friends.

7438. That makes in all 10 months ?—Yes.

7439. That is the extreme case ?—Yes ; but then this regiment might have had two young assistant-surgeons at the death of the surgeon, neither of them having seen more than two or three years' service, and that regiment would be left during the whole of that time in charge of a junior assistant-surgeon, which I think would be a disadvantage to the service.

7440. Do you consider that the system you propose of antedating, and so restoring the whole progress of the rank to its original seniority, would meet the difficulty ?—I think so ; it would be a fair system, I think.

7441. What is the objection to it ?—I know of none. I have not a positive answer, but I have an answer to one portion of my proposition. There has always existed in the department a rule that a medical officer who becomes eligible for promotion is not to be recommended for promotion if he is unwell and unable to enter upon the duties of the new rank. I found that that was working in the Crimea very hard against many officers who had contracted sickness which made them incligible for promotion, and on that occasion I wrote to the Minister for War, and represented that it was very hard upon some particularly good officers who had contracted fever, and had been sent down to Scutari, as when they were under treatment at Scutari I was compelled to promote junior officers over them. I suggested that in future the rule should be so far modified that when an officer who had been passed over on account of bad health became eligible for promotion, and a vacancy arose, that his commission should be dated the day prior to the date of the man's commission who took the position that he would have taken had he been in health, and that was sanctioned, but the other has not yet been sanctioned, but I know of no reason why it should not be; it will be no increase of expense to the public.

7442. Have you any specified grouping together of the stations within which the seniority goes ?—Yes.

7443. For example, do you regard the Mediterranean, Malta, Gibraltar, and the Ionian Islands, as one station for promotion ?—Yes ; and Halifax, Bermuda, Canada another, and the West Indies another.

7444. (*Mr. J. R. Martin.*) Is there any written code that shows what the stations are?—No, and that is perhaps a disadvantage ; it would be very advantageous to remedy that.

7445. (*President.*) You know the rules, but the officers do not ?—Generally speaking I think they do know; but I am sorry to say that some parties pretend not to know, when it answers their purpose.

7446. That would be entirely met by the publication of the rule, would it not ?—Entirely.

7447. Will you put in a paper showing the manner in which the stations are divided ?—Yes, I will. (*See App. No.* XV.) The Mediterranean is one station and North America and Bermuda is another station ; but that has not been held to invariably. In other words, it has not been laid down so absolutely that it has been always observed ; for instance, take Gibraltar at the time of the severe visitations of yellow fever ; it

was made on that occasion a special station, separate from the others, because the officers were subjected to such an amount of duty that it was not considered fair to them to be classed with those not in such danger.

7448. Officers judging at a distance of the promotions, of course could not be aware of that change being made?—They become aware of a great deal. I do not know that they were aware of it, but they are aware of much more than we suppose.

7449. If you say that they know more than they profess to know, is it not important to secure that they could not possibly be ignorant of anything?—Yes; I admit that perfectly.

7450. Will you be good enough to continue your description of the stations?—The whole of the West India Islands—Jamaica is separate; the Isle of France and the Cape. As regards the Cape, the senior medical officer there has been treated differently—he has always been considered as eligible to be promoted to the Indian command, but not the other officers.

7451. For purposes of promotion India includes the Cape, but the Cape does not include India?—Neither is included in the other entirely. The principal medical officer at the Cape, who is a deputy inspector, is eligible to be moved to India, but the regimental or staff surgeons of the first class at the Cape are not necessarily eligible to be sent to India.

7452. (*Mr. J. R. Martin.*) Was not Dr. Burke sent from the Mauritius to be inspector-general in India?—That was long before my time.

7453. (*President.*) How is India divided?—It is a general command.

7454. The three presidencies are put in one station?—Yes.

7455. Then take New Zealand and Australia, how is it with them?—The deputy inspectors there again are eligible to be removed to India, but not the other officers.

7456. Perhaps you will hand in a document showing the changes you propose to make?—Yes.

7457. (*Sir T. Phillips.*) Suppose that case to occur that you suggested, of an officer in New Zealand being senior for promotion, and the inconvenience that would arise to the service from the delay in bringing him to Canada—who would you appoint there?—The senior man who was eligible for promotion, wherever he was if within reach.

7458. Or the West Indies?—Yes; if the senior were in the West Indies decidedly he would be taken.

7459. Not the next senior, but the next that was convenient; the next senior might be at the Cape, and you might say, "It is not convenient to go for him, I will go to the West Indies"?—We might get a man from the Cape, I think.

7460. Altogether there seems to be a large amount of discretion in that case?—I know that, I take the next senior.

7461. If you think he can be got without inconvenience?—Yes.

7462. Have you ever had to deal with such a case as the New Zealand case?—Never; it has never occurred.

7463. (*President.*) In your evidence before Mr. Stafford's committee you mention, among other things, that they have taken, in speaking of seniority, sometimes seniority in rank, and sometimes seniority in service. Does not that amount to selection?—I have endeavoured in all cases to take seniority of service, for I found by resorting to selection I had great difficulties to contend with.

7464. Is it not a false principle when once a man is in a certain rank to compare his services with the services of a man in a lower rank?—The comparison is with men in a lower position; they are in the same rank.

7465. If you say that there is a first-class staff surgeon of 15 years' service, and you compare him with another man junior to him, but who has had longer service in the lower ranks, should you consider him senior to the other though he was junior in the rank?—Yes, though junior in the grade, and for this reason, a short service man had, from some facilities, been able to take promotion when a senior would have got it if he had been available.

7466. (*Sir T. Phillips.*) That is upon the principle that you stated of rewarding men for distinguished service; there are others who would have done as well if they had had an opportunity?—Upon the principle that when two or more officers of a grade are equally qualified and deserving, the one of longest service should be first promoted. Occasions may arise, however, when this course cannot be observed; thus the necessities of the service may require that A, a surgeon serving in this country, be at once promoted over B, several years his senior in service but not available from his being on a foreign station. B, however, gets promotion afterwards, and stands lower in the grade than A, but notwithstanding that I consider he has a just claim to further advancement before A.

7467. (*President.*) But he may have gone through much more severe service?—Yes, but I do not think it would be safe to take that generally into account in considering the claims of officers to promotion, as it is seldom possible to establish the superiority, in that respect, of one officer's services over those of others. Special service, whether from its severity or importance, always secures a certain amount of consideration.

7468. Is not that much more complicated than saying that a man is promoted for his service, and when he is once in the rank there he stands as senior to all his juniors?—Yes, it is more complicated.

7469. Is it not felt to be a grievance by the young men who are passed over?—Yes, I daresay it is, but I do not see, when a man is from necessity thrown into a certain position when he is junior in rank, that he is to be promoted again at the expense of a man who, for all I knew, would have done fully as well or better than him had he been available.

7470. It is possible that he might have done as well, but then you know that the other man has done well?—Yes, but then that officer necessarily who is not promoted, and who believes that he is an equally efficient officer as the man who is promoted with much shorter service, must feel aggrieved.

7471. Among the combatant officers, do you not suppose that similar cases occurred with men who were in the West Indies when the others were in the Crimean war?—Yes; but the medical department is as one regiment, and you have 100 regiments in the line.

7472. Take the case of the artillery, they are like one large regiment, and some men obtained advantages in the Crimea, while the men who happened to be at Hong Kong could not?—But they were not out in their regular tour of duty; they were ordered according to roster at home, and I was forced to select any man I could get hold of.

7473. The roster is a matter of luck, is it not?—No, it is fixed.

7474. But, as far as a man is concerned, whether by your selection or by roster, he may be equally lucky or unlucky?—Yes.

7475. But they do not attempt in the combatant service to compensate a man by counting previous service in a lower rank, in order to give a man seniority over his senior?—I hold notwithstanding such would be just, and that it was nothing but a mere desire to do justice made me do it, and I still see it in the same light.

7476. (*Sir T. Phillips.*) There you introduce selection for special reasons?—No, I take a man because I can get no other.

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7477. (*President.*) Is there not this danger in your system, that persons do not know the motives by which you are governed, so that seniority may look like selection, and selection may look like seniority ?—Quite so ; but at the same time the Commander-in-Chief is open to any remonstrance.

7478. Is not almost the worst fault that you can find with the system this, that it is unintelligible to those who are affected by it ?—But there are hundreds of things occur in military discipline which nobody can explain except those at head-quarters.

7479. Does not much of the dissatisfaction that is felt arise from the system being so complicated that they do not understand it, while a more simple system would be more palatable to them, as they would understand what they were about ?—It would, I think, be more palatable to a few, but not to the whole body.

7480. But to the whole mass, and even to an individual, if he were passed over by regulation would it not be more palatable ?—I have such a respect for justice, that I would not commit myself to an act of injustice.

7481. (*Mr. J. R. Martin.*) But may not a man be mistaken as to what is justice ?—Of course he may, and so may I.

7482. (*President.*) I think the fault of the system is this, that it exposes you to the imputation of injustice where none is intended ?—It does do that, but I do not care about that.

7483. Your evidence as to the necessity of going back to seniority rather than to selection, shows that you are like all other men, open to be affected by accusations of this kind ?—It is my own conviction, after reasoning with myself and seeing the difficulty in making selections justly ; and if you can show me that selection can be made justly, then I will not say a word against selection.

7484. The system of seniority should be so clearly conducted upon principles of seniority, that there can be no dispute about it, and the principle of selection should be clearly selection, and not have the element of seniority substituted for it, while the rule of selection still remains ?—I want to know where I have deviated. I have heard many people say that I have not gone according to seniority, but I challenge any person to bring forward a case in which I have not gone upon seniority when practicable and warrantable.

7485. In the case of officers who were reduced lately at the end of the war, in consequence of their being the juniors of their rank, by what rule do you take them on again to full-pay ?—By the total length of their service.

7486. (*Sir T. Phillips.*) Is any record kept, when the exigencies of the service require a departure from any regulation, of the circumstances that have led to that departure ?—Yes ; in my office I can tell you what led me to pass over a man.

7487. Is it a record made at the time, and stating the grounds upon which one man had been passed over, and another had been preferred?—I do not know that there is a specific record, but the books of the office show it.

7488. (*President.*) In your recommendation to the the Commander-in-Chief, in case of selection, you do not give the reasons ?—No.

7489. You do not do as the Commander-in-Chief does when he promotes a colonel to the rank of a general officer out of his turn ; he states the reasons in the Gazette ?—I am not compelled to do so; but I think I have on one or two occasions stated that the officer recommended was a particularly eligible officer. In the case of Dr. Gordon, who was selected for China, he was not the senior on half-pay, hence in that case I recommended him on account of his merits.

7490. He is a very skilful operator, is he not ?—Yes; but that is not his only recommendation.

7491. (*Sir T. Phillips.*) "Particularly eligible" would convey no information to anybody, unless the real grounds of a man's merits were recorded ?—I did nothing of that kind.

7492. (*Sir J. Clark.*) Among officers of the same rank, if you were called upon to send out an officer—say to China—would you feel yourself quite at liberty to select a man that you thought the fittest, without regard to seniority ?—I would.

7493. (*President.*) You would, under no circumstances, allow anything but your knowledge of an officer to influence you—you would not take seniority into consideration where you were selecting an officer for the command of an important expedition ?—Most undoubtedly not.

7494. With regard to officers who have been reduced, by what rule do you call them back again to full-pay ?—By the total length of their service.

7495. But do you reduce them by the same rule?—Yes.

7496. You reduce the juniors of each rank, do you not ?—No.

7497. Suppose the case of a newly-promoted officer who had very long service in his previous ranks, and was the last man promoted, would you continue him on full-pay, and reduce his two or three juniors, and so have less total service in the junior ranks ?—Yes, that is my idea of justice; and I spoke to Lord Panmure upon the subject, who also seemed to see that it was a case of justice, as many men had been promoted when they ought not to have been, had other officers been on the spot who could have been promoted.

7498. If a man is promoted for merit he loses the advantages of his merit if there is a man immediately below him, and who has been promoted possibly from seniority after very long and distinguished service ?—No; in that case there would have to be a discretion exercised. I should make that a special case, and make a special representation.

7499. The rule would not hold there ?—No; it will not hold invariably in all cases, and I do not think it is possible to make a rule so fixed and definite as that it will work throughout the whole of the British army.

7500. (*Sir T. Phillips.*) It would seem to follow that there must be selection of an undefined character ?—There must be ; and I do not see how it can be avoided, unless some people can see further than I can.

7501. (*President.*) The rule should be seniority ?—Yes.

7502. And the exceptions should be selection undefined ?—I think so.

7503. (*Mr. A. S. Stafford.*) Is not that practically altogether selection, and is it not a delusion to talk of seniority ?—No; because nine-tenths are promoted by seniority, and if every man is to be promoted by seniority, save when it cannot be exercised, then selections become the exception.

7504. (*President.*) Take the case of Dr. Beatson, he was reduced to half-pay, and two officers have been put on full-pay before him, Mr. Wood and Mr. Paynter,?—No; they were on full-pay. It will be necessary to explain that when the medical officers, the staff surgeons of the first class, came home from the Crimea, it was necessary after the establishment was fixed to reduce a very considerable number, and the rule, as I have mentioned, was to reduce them according to their length of service, and not according to their standing in the grade, and in order to do justice to those who had not been promoted so soon as they would have been had they been available. When 15 or 16 staff surgeons of the first class arrived from the east, there were two junior staff surgeons of the first class who had been employed for some time at home, one had been for six or seven months at Portsmouth, and the other had been about the same time at Aldershot, but these were only for temporary duty, and

were not to be continued after the reductions took place, therefore I considered it would it be quite unfair to the service to take a man coming from the Crimea, who was totally ignorant of the duties to be performed in the garrison at Portsmouth, and which were very arduous and difficult duties, such as disembarking the sick and wounded, and also superintending, as far as medical matters were concerned, the disembarkation of the troops. I believe Mr. Wood was junior to many, but as it was only for a few months, as I expected, I thought it would not be just to remove him from a place where he understood the duties, and put a man there who would have to learn his duty, and therefore, as both Mr. Wood and the other man would require to be reduced in a few months, I thought it better to reduce even the seniors to Mr. Wood first, rather than to make any change.

7505. Therefore again that comes to be selection? —Yes, but selection made for the good of the service, there is no question about it; but I felt that I was doing no injustice to the others.

7506. In the case of Mr. Wood, as I understand you, he was not reduced before Dr. Beatson on that ground?—Yes.

7507. He has been now restored to full-pay, has he not?—No; when he was no longer required at Portsmouth I received an application from the principal medical officer at Fort Pitt to say that the number of men to be discharged from the service who were coming there was so great that it would be impossible for him individually to get through the whole of the invaliding, and that he wanted a staff surgeon temporarily to assist him, and in consequence I moved Mr. Wood to Chatham and he was there a month, and when the duties were completed I contemplated at the end of the month putting him on half-pay. Two staff surgeons were required to go to China, and as I thought they would not be long abroad, I sent Mr. Wood to do the duty of one of those men with the expectation that they would soon be back and he would then return to his station, and Mr. Wood would be placed on half-pay. That having happened, there have been two or three circumstances that have given the semblance of injustice to this case; but Mr. Wood is now going to be placed on half-pay, as I see no prospect of a senior staff surgeon coming back soon, and the two senior staff surgeons in the service are going to be restored to full-pay.

7508. Who are those?—Dr. Fox and Dr. Robertson.

7509. They are senior to Dr. Beatson?—Yes, they are senior to him; I wish to state the complications and inconveniences which will arise in consequence of the step I have found it necessary to take, and which I did not resolve to take till after full consideration. The constant remonstrances of Dr. Beatson led me to recommend that Mr. Wood and Mr. Paynter be at once placed on half-pay, and that Dr. Fox and Dr. Robertson be recalled to full pay to replace them. The necessity for the services of these two officers will cease when the two staff surgeons now in China shall return, and then it will become again necessary for two to be placed on half-pay. The changes thus to be made will in no way conduce to the benefit of Dr. Beatson, as there are many on half-pay who must be restored to full pay before he can.

7510. I want to know what is the rule by which you are governed; in this case, as in others, the rule is selection, but the exceptions are so frequent that, if they are not acknowledged, they shake confidence in the rule?—They are perfectly acknowledged so far as the medical officers are aware of them; Dr. Beatson was told over and over again why I kept Mr. Wood; but these cases are exceedingly rare.

7511. But still they exist?—Yes; and in my opinion, from my experience, it will never be possible that they should not occasionally occur.

7512. (*Mr. A. S. Stafford.*) In what way can you deal with a medical officer who misconducts himself, what degree of punishment can you inflict?—I can inflict no punishment but a reprimand, unless an officer has acted so badly as to justify his being brought to a court-martial.

7513. (*Sir H. K. Storks.*) Can you remove him from one station to another?—I could do that, but I have never done it, and besides, the government would not allow me to incur the expense of his passage, and the passage of a man back to his place.

7514. (*Sir T. Phillips.*) Is the officer's promotion stopped?—I cannot stop his promotion unless by a court-martial.

7515. So that, however great may be the demerits of a man, he must go up?—No, I can pass him over.

7516. Do you do so?—I have done it in some instances, and I am prepared to justify myself.

7517. Is there any record kept of the reason which induced you to pass any man by?—Yes.

7518. (*Mr. J. R. Martin.*) Can there be any more legitimate ground for promotion than active field duties well performed, even though the officer came accidentally to discharge them?—No; but I think it would be unjust to others to promote him over them.

7519. But there must be some accidents in every public service?—The object is to do as little injustice as possible, if you have the means of acting justly.

7520. Suppose a combatant officer distinguishes himself in the field, and he is rewarded for it, you would not think it necessary, I presume, because some other man might have equally distinguished himself, to place him on an equal footing with the other officer?—No; every regiment is in a circle, and the promotion goes on in that circle.

7521. Take the case of a staff officer who has distinguished himself in the field, and receives his reward; another man would have distinguished himself equally if he had had the opportunity; how are you to put those two men on an equal footing afterwards?—I do not know; a general officer has the power of selecting his own staff, and extending to that staff all the advantages which the situation offers them. I have the power of selecting medical officers, and I can extend to them all the advantages which can be legitimately extended to them.

7522. (*Sir H. K. Storks.*) Suppose you find an incompetent officer, what do you do with him?—I can do nothing with him but try to get him put on half-pay. I can only tell a colonel, if he sees that a man is irregular in his habits, you must find the means of bringing that man to a court-martial.

7523. (*President.*) You cannot try a man by court-martial for professional incompetency?—I could do it, but I know he would be acquitted, and therefore I would never attempt to do it unless the case was exceedingly gross.

7524. (*Mr. J. R. Martin.*) Should not any such court-martial be always composed of a portion of medical officers as well as military officers?—Certainly; I should say so, but the rules of the service do not admit of it.

7525. (*Sir T. Phillips.*) Are medical officers ever tried by court-martial?—Yes; a charge of neglect of duty was brought against a man during the time of the cholera; he was partly afraid of the disease, and partly neglected his patients, but he was acquitted.

7526. But that is extremely rare, is it not?—Yes. When a medical man is warned by me that he must stand a court-martial if he does not resign, he is generally aware of the danger he stands in, and he generally resigns.

7527. (*Mr. J. R. Martin.*) In every case of a trial of a medical officer by a court-martial do you think there should be on the court a certain portion of medical officers?—Yes, if it is for professional reasons; but I have that high opinion of our military officers that I would go before them to-morrow without a single medical officer. In professional matters I think there ought to be medical officers on the court.

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7528. (*Mr. A. S. Stafford.*) Have there been instances of medical officers resigning rather than stand a court-martial, and subsequently being restored to the service?—None, that I am aware of. There is a rule which we generally observe, and that is, never to restore a person who has resigned.

7529. (*Sir H. K. Storks.*) But a man may have resigned for private reasons, and not from any misconduct?—Then you do not restore him to the same rank.

7530. (*Mr. A. S. Stafford.*) Can you say that there have been no army medical officers who have resigned to avoid a court-martial and whose names are not now in the Army List?—Not in my time; I do not think there are any men in the service now who had been threatened by court-martial and who had resigned, and have afterwards been reinstated.

7531. (*Sir J. Clark.*) Do you make any distinction between a person who retires from the army on account of private affairs and one who retires to avoid the consequence of a court-martial?—Yes. If a man retired for his private affairs I should object to his restoration to the service, but I might be overruled, as happened some time ago in the case of a man of the name of Macpherson who retired to some occupation in the Isle of France; he failed there, and he applied to be restored to the service; the case was put before me in this way, you want medical officers and you cannot get them, why not agree at once to the restoration of this man. That had a certain weight with me, and I did not raise any further objections. Before the war he had repeatedly applied, and I always raised the objection I thought that it was unjust to the officers serving to let a man go off for six or eight years, and then come back again and take his standing in the department.

7532. (*Sir H. K. Storks.*) Was he restored?—Yes.

7533. Is he now in the service?—He is now on half-pay.

7534. Is he now on the permanent half-pay list?—He is on half-pay, something very small.

7535. Supposing that man is not brought in again, is he eligible to be brought in again?—Yes. I do not see any reason why he is not when it comes to his turn. He goes to the bottom of his list; he loses all his previous service.

7536. Mr. Macpherson's is a *bonâ fide* restoration to the service?—Yes, and to the rank which he held in the service; but he has only one year's service in that rank instead of, I think, eight or ten, and therefore he is junior to all the other surgeons.

7537. He is only on temporary half-pay?—I cannot exactly answer that question. I think he has very diminished half-pay, not temporary half-pay. I suppose if I do not bring him in when all others have been brought in to full-pay, I shall have a letter from the War Office to ask me whether I am not doing it.

7538. (*President.*) Will you state the grounds on which you take a man by selection?—The grounds are, his superior efficiency.

7539. How is this superior efficiency ascertained?—By confidential reports, and my general knowledge of all the individuals—these are the only grounds.

7540. (*Sir T. Phillips.*) Is there any limitation to your discretion as to the time of service. Might you say, "I will take a man who has served five years for great merit, and promote him to the rank of surgeon"?—I could not do that. I can only promote by seniority to the rank of surgeon.

7541. Take a surgeon of the second class, what limit is there to your selection in that case other than your own judgment of the man's merits?—There is no fixed limit.

7542. You might promote a man who had served one year as a staff surgeon, and make him a surgeon of the first class?—No; because he must have served either three years abroad or five years at home, before he can be promoted as staff surgeon of the first class.

7543. He must have served in the second class for five or three years before he can be promoted to the first class?—Yes.

7544. Is that rule published?—Yes. There is a limit, as shown by the warrant at page 48 of the Regulations, "No medical candidate who has not "passed his examinations at the Royal College of "Surgeons of London, Edinburgh, or Dublin, shall be "eligible for the commission of assistant-surgeon, and "he must have served as such on full-pay five years, "before he shall be eligible for promotion to the rank "of staff surgeon of the second class. Staff surgeons "of the second class must have served 10 years in the "army on full-pay, before they shall be eligible for "the next step of rank."

7545. No merit would enable you to dispense with those conditions?—Yes; if I went forward and submitted that a man was so meritorious that an immediate step of promotion should be given, I might be able to induce the Minister for War to ask the sanction of Her Majesty to suspend the warrant in that case.

7546. It would be by special warrant?—Yes.

7547. Supposing that you were to select a person for his merits, would you record at the time, in some document open in the department, the grounds upon which you had selected him and passed by his neighbour?—Most decidedly not. You would have a state of dissatisfaction most injurious.

7548. In fact the reasons for your selection are confined to your own breast?—Yes, and the confidential reports, which of course give me information.

7549. Those reasons which have induced you are confined to yourself?—Yes, only in this way, that if you were the person passed over, I would tell you why.

7550. There would be no record of the reasons which had influenced your judgment?—The record would be the statement contained in the office.

7551. (*President.*) There would not be an entry in any book, "So and so promoted on the recommenda-"tion of Dr. Smith, on such and such grounds"?—No.

7552. (*Sir T. Phillips.*) You would not have something like this? "Having considered such and such "documents, and being aware of the merits of A. B. "in such and such respects, I do recommend him for "promotion now"?—Nothing whatever.

7553. (*President.*) Your recommendation to the Commander-in-Chief is simply a recommendation of promotion without any reasons assigned?—Not invariably. Occasionally reasons are assigned; but, generally speaking, not.

7554. (*Sir H. K. Storks.*) It is a matter of favour to the individual, if you explain to him the reasons?—No.

7555. (*President.*) Do the officers who are reduced have the same rate of half-pay as the others?—No; they have somewhat more than the others who are not reduced.

7556. You have told us what are the rates of pay of officers now reduced, and what you think they ought to receive with regard to the scale of retiring allowances; you propose to alter that scale likewise, do you not?—Yes.

7557. Do you intend to alter the half-pay?—Yes; but none are allowed to go permanently on half-pay until they have completed a certain period of service. It is 25 and 30 years at present. I propose that the lower half-pay should now be after 20 years of service, and the higher after 25, instead of 25 and 30. Unless from ill health they shall receive after 25 years, seven-tenths of their pay. In the case of sickness, when a man is placed on half-pay, and it is in that case only that he is placed on half-pay, or even permitted to go on half-pay, I propose, as he requires some assistance beyond what he would receive from his half-pay, to increase it to three-fourths.

7558. Is there a material alteration in the relative value of the half-pay and your new rates of full-pay, as compared with the old ones ?—There is, as nearly as possible, the same relative value. It is rather in favour of the new scale, because it was necessary to do that.

7559. Do you consider that at present, irrespective of the amount, the rate of half-pay is fair enough, in proportion to the full-pay ?—If you reduce the period of service it is large enough ; but not if you make men serve 25 or 30 years. With reference to what I mentioned before, as to the allowance of half-pay given to officers compelled from sickness contracted in the public service to go on half-pay, I propose, instead of their having the ordinary rate of half-pay, which is lower than the rate on reduction, that they should have three-fourths of their full-pay at the time, whether from reduction of the establishment, or from sickness.

7560. You make no other change then ?—No.

7561. You propose no other scale of half-pay ?—No.

7562. With regard to retired pay, you have no half-pay in the medical department ?—No.

7563. You have a reduced pay on retirement ?—Yes.

7564. What alterations do you propose to make in the retired rates ?—I will put them in. (*See App. No.* X. (2).

7565. Do you intend any part of that retirement to be compulsory ?—Yes, I think it ought to be compulsory.

7566. At what age ?—At 50 for surgeons.

7567. (*Mr. A. S. Stafford.*) Will you state the time of life, or period of service, after which a man should retire ?—The time of life (for a man may enter at a very late period of life, if we go on with the competitive examinations which we have) I should fix at 50.

7568. Will you always get their certificate of age correctly ?—Yes.

7569. (*President.*) Have you a maximum age under your competitive system ?—Yes ; but I suspect we must give way in that. The East India Company do not fix so low an age, but take the best men, limiting them to 28, ours is 25.

7570. Therefore their limit is three years longer than ours ?—Yes.

7571. The mortality among officers of the medical department is high, is it not ?—It is not universally very high. It is high amongst the juniors, but not amongst the seniors.

7572. Do you intend to give different rates of retirement to different ranks ?—Yes ; seven-tenths for those above 25, and five-tenths for those below 25 years service upon the pay of the rank from which they retire.

7573. So that then rank will have a very great advantage ?—Of course.

7574. Therefore that would be conducted upon a different system from that which now obtains. You count seniority of service rather than seniority in the rank, in giving promotion and in making reductions ?—No ; they are both upon length of service ; but retired pay must depend on rank.

7575. But it is to be a mixed principle, partly for length of service and partly for rank, upon which they shall earn retirement ?—Yes. If a man is deputy inspector he retires immediately after 20 years of service, on five-tenths of his pay ; and if he has served 25 years on seven-tenths of his pay.

7576. Do you know at all the value of the allowances as it would be calculated in an insurance office ?—No.

7577. (*Sir T. Phillips.*) Are the Commissioners to understand you to say that you would make it compulsory upon a staff surgeon of the first class to retire at 50 years of age ?—No ; he is an administrative officer.

7578. (*President.*) You propose compulsory retirement in the upper ranks likewise, do you not ?—Yes.

7579. At what age ?—60 or 65 for the whole.

7580. How would you count a first-class staff surgeon ?—65 being an administrative officer.

7581. There is a new pension warrant by which the amount of pension given to an inspector-general is less than that given to a commissary-general ?—It is less by 50*l.* a year, I think.

7582. Does the same difference pervade all the ranks, both in the commissariat and the medical service ?—Yes. The commissary-general gets 350*l.*. Then, as to the deputy inspectors, the deputy commissary-general at the head of a department gets the same pension as an inspector-general, though he is a rank below him. He gets 300*l.*, the same as the inspector-general gets.

7583. By the same warrant a change is made by which a medical officer, take a deputy inspector for example, would not have the same relative rank as now he possesses ; he ranks with a major not in command, does he not ?—A colonel or a lieutenant-colonel, an inspector-general of hospitals who ranks as a brigadier-general, all get the same rate of pension, which is quite incongruous. A deputy-inspector of hospitals gets the pension of a major not in command, though he has the relative rank of lieutenant-colonel.

7584. (*Mr. J. R. Martin.*) Has any change taken place recently in the pensions granted to the widows of medical officers ?—Yes, about two years ago, during the war. I recommended that medical officers' widows should be entitled to the same scale of pension as military officers' widows were. Previously to that they had a much lower rate of pension.

7585. Lower than the widows of paymasters and quartermasters ?—No ; because paymasters take the pension according to their rank ; but medical officers' widows got a much lower rate of pension than military officers' widows.

7586. Is the change satisfactory ?—Yes.

7587. (*President.*) You propose that in future officers retiring from sickness shall be put on the reduced rate of half-pay ?—Yes ; they require that little assistance.

7588. You think that the present system is a hardship ?—Yes, I think so.

7589. Are there any other grounds of complaint that you wish to advance ?—Yes. There are a great many disadvantages to which medical officers are subject, all of which I have stated to Lord Panmure.

7590. You do not wish to make any addition to or qualification of any of those statements ?—No. It may occur in taking evidence that some one will see some additional matter to suggest that did not occur to me at that time or now. I think I suggested all that I thought desirable.

7591. As regards relative rank you wish the officers to take rank according to the date of their commissions ?—Yes, but that they shall rise after a certain number of years ; that a regimental surgeon, after a certain number of years' service as such, shall get the rank of major, and so on throughout all the other ranks ; that a deputy inspector, after serving in the rank for a certain number of years, shall get an increase of rank, and an inspector the same.

7592. Do you propose that they should serve in courts-martial according to their rank ?—I think either that they ought to serve on courts-martial according to their rank, or that they ought never to be employed on courts-martial. I hold that it is a most invidious and most unpleasant position to be placed in. I do not think that there is one hardship that a senior medical officer has to complain of more than that he has to sit as junior to an ensign on a court-martial.

7593. Is there any change that you propose as to the relative rank of medical officers ?—I have proposed a change throughout.

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7594. Do you propose not merely that the nominal rank should be changed, but that an officer should really rank according to his relative rank ?—A medical officer never can have command, it would not be consistent nor to the good of the service that he should have it. In my opinion he must always only have relative rank.

7595. (*Mr. J. R. Martin.*) Would you call his position on a board relative ?—No ; there he should take rank according to service.

7596. (*President.*) Would you make him the president ?—Yes.

7597. Would you make him president upon a court-martial to try a combatant officer ?—I do not see why not. A medical officer who has served a long time in the army knows almost every intricacy connected with the army just as well as a military officer ; therefore I do not see that a medical officer would not make himself equally competent if he knew that he was liable to be called upon in that way.

7598. (*Mr. J. R. Martin.*) Do not you think that the relative rank should be made substantive, and not nominal ?—I do not understand how that could be done.

7599. For position, for quarters, for prize money ; that if an inspector-general has a certain corresponding co-ordinate rank in the army, he should have all the privileges appertaining to that rank ?—I understand that relative rank should give him all those privileges. In my relative rank of major-general I should get all the allowances of a major-general if I was in garrison.

7600. Did you hear of the case of Dr. Donald Macleod, the inspector-general of Her Majesty's hospital at Madras, who, on the occasion of a committee of inquiry into some civil matter, was placed under a captain of the Madras army, he having the rank of brigadier-general ; in that case what was the use of his holding the corresponding rank ?—Because that is a special regulation that applies in India, and also in England. I have had to sit as a member of a board in condemning old blankets and things of that sort, a captain of the garrison being the president. I objected to it at the time. I said that I did not think it was right, for I ought more properly to have been president, as I knew more about blankets than he did.

7601. (*President.*) Have you any proposal to make with regard to the uniform ?—The uniform has lately been changed.

7602. (*Sir H. K. Storks.*) Has the uniform of the medical clerks and people of that sort been changed ?—A uniform was established for a time when they were at Scutari.

7603. (*Mr. J. R. Martin.*) Has the uniform given satisfaction ?—As far as I know it has given satisfaction ; perhaps not at the time, for a number of ornaments were taken away, and perhaps they did not like it.

7604. Did you hear the reasons assigned by Lord Gough for having, on the committee that we have spoken of, superseded an old surgeon of the Indian army by a young captain, the surgeon ranking with a major ?—I did not.

7605. The reason assigned was that all medical rank was official ; does that convey to your mind any satisfactory reason ?—Certainly not.

7606. Was not the rank of the Commander-in-Chief himself official, and did it not cease with his departure from India ?—I should think so. I will now hand in this memorandum.

7607. (*President.*) The uniform of a medical officer ought clearly to show who he is ?—Yes, I think so. I think there is one distinction at all times which conveys that, namely, the want of a sash. In all other respects I think the uniform might be alike. They do not wear a sash, but a black belt and a black plume.

7608. (*Mr. J. R. Martin.*) Might not that distinction of theirs render them liable to be hit in action by making them conspicuous ?—No, I do not think so. The distinction is too small, you must have a distinction. You must have some means of knowing a medical officer from other officers.

7609. (*President.*) A complaint is made that the similarity of the forage cap to that of the commissariat officers produces mistakes among the men, who appeal to the commissariat officers for surgical assistance ?—I do not know the commissariat forage cap, therefore I cannot say.

7610. All that you wish is that the uniform should clearly convey the professional position of the officer who wears it ?—No, more than that. Medical officers ought not to be degraded as they were before the new dress was drawn up. I drew it up myself, and it was sanctioned by Lord Hardinge. I secured as great a similarity in the dress for the medical officer as I thought could fairly be done with a due regard to the interests of the public service. In my recommendation I put in for the senior medical officer of a department a brass scabbard ; that is not printed in the regulations, but I believe that was accidental. No objection is ever raised to the senior medical officer of a department wearing a brass scabbard.

7611. (*Mr. T. Alexander.*) Are you aware of a first-class staff-surgeon, ranking as a field officer, having been found fault with and desired to lay aside the brass scabbard ?—I am not.

7612. (*Mr. J. R. Martin.*) Have you heard any objection to the black belt as being disparaging to a medical officer ?—Yes ; I have heard individuals object to it, but I have heard individuals object to any difference whatever.

7613. (*President.*) The man who wants to be assimilated to a combatant officer is a man who is ashamed of his profession, and if he is, he is not fit to be in it ?—Just so.

7614. (*Mr. T. Alexander.*) Would you not recommend a brass scabbard for a first-class staff surgeon instead of a black one ?—Yes, that was approved by Lord Hardinge ; I saw the approval myself ; I think there has been some mistake in the printing.

7615. (*President.*) In your recommendations which you put in, do you include anything with regard to rewards and promotion for service in the field ?—Yes.

7616. Do you consider service in general hospitals to be of so oppressive a kind that it ought to be placed on the same footing as service in the field ?—It ought to be placed on the same footing.

7617. It has been held that the medical officers at Scutari are not entitled, they not having been in the field ?—I look upon the men employed in the hospitals at Scutari to have been as much in danger of their lives as the men in the field.

7618. Was not the mortality among them greater than among the men in service in the front ?—Yes.

7619. (*Mr. A. S. Stafford.*) It would be a great discouragement to men who were so placed in future ?—Yes ; it will make them avoid being placed there if they can ; they constantly want to get to the field ; there were constant demands to Sir John Hall to let them come up to the field.

7620. (*President.*) It is advisable, is it not, to give additional pay for additional time on service in bad climates ?—I do not think it is advisable, for every man is liable in his turn to that.

7621. You stated the other day that the inspectors who inspect have instructions which are lithographed ?—Yes.

7622. They are not published in any warrant?—No.

7623. Ought they not to be published, so that the officers who are inspected should know the rules by which the inspectors conduct their duty?—They might be ; it is not the practice in the military branch.

7624. Could you put the instruction in ?—Yes, I can.

7625. Can you put in all the forms of returns which are used by the medical officers, and which they send home ?—Yes.

7626. With regard to confidential reports, Sir J. Hall stated the other day that they are not confidential, and that, so far as he is concerned, he makes it a rule always to impart the substance of them to the medical officers against whom they are made ?—Yes.

7627. Do you think that that is a good rule ?—I think so ; I think that they are not intended to be so purely confidential as not to be made known ; I should have no hesitation in making any communication to an officer if he asked for it ; when anything unfavourable reaches me I generally write the officer a letter, telling him what must be the consequence of his persevering in his line of conduct. I send that under cover to the principal medical officer to send to him ; I do not think that in one case out of fifty a man ever asks me why he is found fault with, because he always knows it.

7628. (*Mr. J. R. Martin.*) Would it not be satisfactory to the medical officers that the confidential reports should be on the same footing as those with respect to combatant officers ?—They are exactly so; perhaps there is even more communication made by me to the officer accused.

7629. (*President.*) It being the custom at the Horse Guards always to communicate to an officer the substance of any confidential report made against him, do not you think it would be advisable to take the same course with regard to medical officers ?—I do so. I think there must be some error in the print; Sir George Wetherall must have misunderstood the question ; I have never known it to be the case during my service that military officers were informed specially of what they were accused of ; they may be informed in general terms that the General in command does not approve of their conduct.

7630. (*Mr. J. R. Martin.*) The difference would appear to be that in the one case the officer is informed, and in the other case you wait until the officer asks to be informed ?—No, I do not wait until he asks ; when a statement is made against him I let him know that he has been unfavourably reported upon ; I do that as a matter of course to every officer ; I write a letter and I send it through the principal medical officer to forward to him if he is at a foreign station. If it is of such importance as that I think the department ought to know of it, I require him not only to call the medical officer who has been guilty into his office, but to assemble the whole of the medical officers to listen to the letter.

7631. Is it optional with you to do that ?—Yes.

7632. It is not a fixed rule of the service ?—No.

7633. (*President.*) You state in your evidence before the select committee on the Army Medical Department, in answer to question 183, "I generally make a habit, "if an officer complains who has certain statements "against him, to tell him that he has those statements "against him ; I do not like to conceal it from the "officer." That implies that you have not originally told him when the complaint is made ?—I tell him in general terms that he is complained of, and that if he perseveres it must be to his detriment ; and if he professes not to know what he has done wrong, and asks me, I then tell him.

7634. Then you say, "Unless he was to press me "very hard to know what they were, I should not "tell him the exact things ; but at the same time I "would not object, if he pressed hard, to tell him the "exact things ?"—Yes ; it is a thing understood —a sort of freemasonry in the service—that you are not to expose the principal medical officer to imputations, for then they would not give you reliable reports at all.

7635. (*Mr. A. S. Stafford.*) In question 3267, before the same committee, Sir George Wetherall is asked, "Do confidential reports go to the adjutant-"general ?" to which he replies, "Always." He is then asked, "And is it the usual practice, if in those "confidential reports anything injurious to an officer "is mentioned, to inform the officer so complained of "that he has been reported against ?" and his answer is, "Certainly, through his commanding officer." "Is "that practice invariably followed ?"—"I should "think so. Ever since I have been in the office the "invariable practice has been that the commanding "officer should be written to, stating what the general "has said ; but all such reports connected with me-"dical officers are immediately sent to the director-"general for him to deal with as he thinks proper." Then at question 342 you are asked, "With respect "to the confidential reports, of which you spoke in "your former examination, are you able to state any "differences which exist between the confidential "reports made to you and the confidential reports "made with regard to the competency of officers to "the War Office ?"—"I cannot say that I know what "the confidential reports are which are made to the "War Office." Question 343. "Do you ever commu-"nicate to the individual implicated the confidential "reports made to you ?"—"No, I do not as a rule. "As I stated on Thursday, if an officer was to com-"plain to me that he was suffering seriously, in "consequence of some reason or other, in a way that "he did not think he deserved to suffer, and if he "claimed consideration or advancement, I would "consider it then my duty to tell him why he was "suffering. But I do not make it a rule to commu-"nicate the confidential reports." Question 344. "In short, you make it a rule not to communicate "them ?"—"I do it only as an exception." Do you still adhere to this statement ?—I still state what I stated here in the very first answer that I gave. Suppose the principal medical officer at the Cape reports unfavourably to me of another. I immediately address a letter to the officer in general terms. I do not say, you have not been attending your hospital regularly, or doing something improper in the barracks ; I tell him that his conduct has been unfavourably reported upon, and that if he does not change the consequences will be serious.

7636. (*President.*) Do you not give the substance of the complaint. If a man was reported for some bad medical treatment, or if he was reported for inattention to his duties, want of zeal, or absence, would you not specify that it was for neglect of his duties or that it was for incompetent treatment ?—I should not. I would send to the principal medical officer, and leave it for him to send for the man and give him my letter expressive of what the consequences will be if his conduct is persevered in.

7637. Would you make it a matter of instruction to the reporting officer always when he makes a confidential report to communicate to the officer reported against that that report is made, after the manner of Sir John Hall ?—The only fear is this ; there are some principal medical officers so weak, and so desirous of standing well with those serving under them, that I am afraid if that was required they would not report unfavourably if they had to show their report to the officers. Sir John Hall would not feel that, but others would, and we should not know so well as we do the characters of the medical men in the army.

7638. (*Mr. J. R. Martin.*) Should not this question be settled by well-understood regulations ?—I have no objection to that ; I only state that I anticipate danger from settling it by regulation.

7639. (*President.*) Do you find the confidential reports that come home vary ?—Very much.

7640. They vary not so much from the different conduct of the men offending, but from the different way in which the reports are made ?—Yes.

7641. (*Mr. A. S. Stafford.*) Does not this place the medical officers in a position in which no other officers are placed, that of not knowing what the charges are which may silently operate against them, and which they never know or hear of ?—They do know.

7642. (*President.*) Not as a matter of course, the information is not given whether an officer applies or not ?—No, but he is informed that complaints have

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been made against him, and I almost always find he knows what they are.

7643. It is given to a man who happens to be in England, but it is denied to a man who is abroad ?—No, he would get it if he were to apply for it. Every man knows that there are confidential reports every year coming in.

7644. (*Mr. A. S. Stafford.*) He may not know that they are adverse to him ?—No ; nor will any military officer know that.

7645. (*President.*) Have you observed what Dr. Burrell says upon that subject ? He says, "I do not "disapprove of them (that is, of the confidential "reports), provided they are not done in secret ; that "is to say, if an officer is disapproved of by the prin- "cipal medical officer at the station, he should know "that he is found fault with." Then he is asked, "Then what becomes of the word 'confidential,' if "that is the case"? To which he replies, "It should "be confidential ; but at the same time it appears to "me that an officer should certainly not be reported "unless he has been found fault with. You may not "exactly tell him the express words in which you "report him; but, if an officer has neglected his duty, "he certainly ought to be told of it by the principal "medical officer of the station, otherwise he should "not be reported"?—I do not suppose that that ever happened. No principal medical officer has ever reported, I think, a man whom he has not found fault with when he was doing wrong.

7646. Have there never been instances in which confidential reports have subsequently been disproved? —I know of none. I have now a correspondence going on in which an assistant-surgeon complained to me. I communicated to him that he had been most unfavourably reported upon from the West Indies, and that if he persevered in his course of conduct it must act detrimentally to his advancement in the service. He denied that he had done anything ; and he asked what he was accused of ; and I sent him a statement of what he was accused of. I also sent to the officer who reported him, and I have sent out now to the principal medical officer his reply. I always have sent to the person who reported him the officer's reply.

7647. (*Sir H. K. Storks.*) Do you ever see the confidential reports as to medical officers that are sent in at the half-yearly inspections ?—Yes.

7648. (*President*) Do you agree with Dr. Burrell that it is "most unfair if an officer who has neglected "his duty is not told of it, but is confidentially reported "upon unfavourably, and this is brought against him "10 or 12 years afterwards, and his promotion is "stopped in consequence, and probably he does not "know how, or on what station ?"—It is decidedly unfair.

7649. (*Mr. A. S. Stafford.*) But that must happen ? —I do not admit it. What I say is, that I write to the officer who has been doing anything wrong, and I send the letter to the principal medical officer on the station, to require him to explain to that officer what must be the consequences of his proceeding in that way. If he goes on doing his duty afterwards satisfactorily, a report made 20 years ago will not have any effect upon him when he is eligible to be promoted.

7650. Dr. Mapleton says, "If the confidential "reports go to the extent of stopping a military man's "promotion, that is not done without the military "officer being made acquainted with the nature of the "reports against him ordinarily ; whereas, if a medical "officer has a confidential report against him, he "knows nothing about it, but he finds that he is not "promoted, and he does not know the reason. Surely "it is very unjust to stop a man's promotion and "damn him for ever without giving him an opportu- "nity for explanation ?"—I ask facts ; to show such is ever done.

7651. (*Sir H. K. Storks.*) Suppose an officer is reported to you as incompetent, and betraying ignorance of his professional duties, do you communicate that to him ?—Yes, and I recommend steps to be taken in such a case.

7652. But you say that you cannot remove him for it ?—No ; I can recommend an investigation. There was a case of that kind in Canada. An officer was reported as physically and mentally incompetent for a medical officer. I had an inquiry made there, and the result was unfavourable to him, proving that he really was as had been alleged. I endeavoured to get him placed on half-pay, and after a long correspondence I succeeded.

7653. How long had he been in the service ?—20 years. He was a surgeon.

7654. (*Sir J. Clark.*) He had become ill in the service ?—I do not know that. As far as regards his mind I suspect it was always weak, but as regards the body, he became ill in the service.

7655. (*President.*) Sir John Hall stated that he made no confidential reports while he was in the Crimea ; was he in error ?—He was right as far as regarded general confidential reports. It was impossible to make confidential reports of 600 or 700 men, and he had comparatively little opportunity of judging of every man. To make confidential reports a man must have some personal knowledge of the men. He simply reported as to a certain number ; the best men he reported upon and recommended them for consideration, and some bad men he also reported upon, but he did not make one general report.

7656. (*Sir H. K. Storks.*) He reported upon the good or bad men that fell under his observation ?—Yes.

7657. (*President.*) How is the medical examination for recruits conducted ?—after certain preliminaries have been gone through, and the military authorities see no objection to accepting a man as a recruit, provided he is physically fit, he is sent to the inspecting medical officer.

7658. Are there any rules for medical inspection ? —Yes.

7659. Are they old or modern rules ?—Their date is 1845.

7660. Is there any examination standard for the admission of recruits other than the standard of height ?—Yes, there is ; physical power ; every part of a man's body must be proportionate to constitute a good soldier.

7661. Is the man's depth of chest measured as well as his height ?—Yes, the size round the chest.

7662. Is he tried by the stethescope ?—Not unless there is any particular reason for doing it. If there is any suspicion of pulmonary disease it is done.

7663. (*Mr. A. S. Stafford.*) Is there any punishment for passing recruits as sound that ought not to be passed ?—Nothing but a censure. At one time there was a punishment. They used to make the medical officer pay all the expenses, but that was found to be hard, as it might be a mere error of opinion. It was found that they could not get recruits. No medical officer would pass a man unless he was certain to pass on joining his regiment.

7664. There are two ordeals for every recruit to pass through, are there not ?—At one time, after a man was inspected by a staff surgeon of the first class, he was sent to the regiment ; and, when he arrived there, the surgeon or assistant surgeon of perhaps four or five years' service, examined him and perhaps found there was some defect which enabled him to reject the recruit notwithstanding a staff surgeon of the first class had approved of him. That being such an inconsistency, I represented to the Commander-in-Chief that I thought it was a great mistake, and was causing great discontent, as the opinion of a staff surgeon of the first class might be overruled by a young assistant-surgeon, and I recommended that the examination by a staff surgeon of the first class should be final. That has been adopted since 1851, and is working very well. Now, when a man joins his regiment there is no appeal, unless he may have contracted some injury during a journey after the

time that he is inspected. If he breaks his leg, and the leg afterwards becomes sound, the man must be admitted, but if the bone get overlapped and the leg shortened he is rejected by the medical officer of the regiment.

7665. May no regimental officer pass a recruit now ?—Every regimental officer can pass for his own regiment.

7666. (*Sir H. K. Storks.*) At his own regiment he can reject a recruit admitted at head quarters ?—Yes.

7667. (*Mr. J. R. Martin.*) Have you considered the question of reducing any of the grades of the officers in the medical department ?—I do not think they could be reduced. *Dr. A. Smith.* 6 July 1857.

7668. You think that all the grades that you have now are necessary to the service ?—No ; the staff surgeon of the first class is necessary, only in this way, that the government would not allow a deputy inspector for every small station where an administrative officer is required.

7669. Do you consider the staff surgeon of the second class a necessary grade ?—Yes, for detached hospital duties, where a surgeon is required. He is a surgeon exactly as a regimental surgeon is a surgeon, the one is for staff duties and the other for regimental duties.

Adjourned to Wednesday at One o'clock.

Wednesday, 8th July 1857.

PRESENT :

The Right Hon. Sidney Herbert, M.P.	T. Alexander, Esq., C.B.
A. S. Stafford, Esq., M.P.	Sir James Clark, Bart.
Sir H. K. Storks, K.C.B.	J. R. Martin, Esq., F.R.S.
Dr. Andrew Smith.	Dr. John Sutherland.

President, The Right Honourable SIDNEY HERBERT, M.P.

Dr. George Stewart Beatson, examined. *Dr. George Stewart Beatson.* 8 July 1857.

7670. (*President.*) What is your rank ?—I am staff surgeon of the first class.

7671. Where have you served ?—The first year of my service was at Fort Pitt, Chatham ; on 22nd May 1839 I embarked for Ceylon, served on that station till February 1851, when I embarked in charge of invalids for passage to England. Again embarked 20th July 1851 for Madras, to join the 51st regiment, to which I had been appointed surgeon the previous January ; joined the 51st at Madras, 28th August, embarked with it for service in Burmah on the 31st of March 1852 ; present, without a day's absence, with the head quarters of the regiment throughout the whole of thesecond Burmese war ; re-embarked for Madras 20th February 1854, on the termination of the war. I then embarked with the head quarters of my regiment, 4th April, and arrived in England on the 2nd August. On the 8th of December, I was promoted to be a staff surgeon of the first class ; and immediately after I went to Turkey, and served at Scutari, Smyrna, and Koolalee, till the 8th of October ; on that day I embarked for the Crimea, and served there till the 30th June 1856.

7672. Were you chairman of a meeting of medical officers, who sent home a memorial on the status of the medical department ?—Yes.

7673. Before going to the question of retirement and promotion, I will put this question : I believe you are in favour, with regard to the education for the medical department, of a medical as well as a surgical diploma being required, also a test of general education; and a competitive examination, practical as well as theoretical, conducted by an independent body ?—Yes, I am.

7674. Hygiene to be taught subsequently, in some military hospital ?—Yes.

7675. Are you an advocate for compulsory retirement, with a view to promote greater circulation in the ranks of the medical department ?—I am, decidedly.

7676. At what age, or after what amount of service, would you make retirement compulsory ?—Not later than 35 years' service, or, at all events, at 60 years of age.

7677. Whichever first happened ?—Yes ; as in the event of an officer having been on half pay he might be 60 years of age, without being able to complete 35 years service, but he would be old equally the same.

7678. Age having equally disqualified him by infirmity, you would, on the one ground of age, make retirement compulsory ?—Yes.

7679. Would you apply the same rule to inspectors and deputy-inspectors ?—To all ranks. I hold that for any rule to be just, it must be general. In the East India Company's service the practice to give a pension for service and not for rank obtains in the military as well as in the medical service ; it is given for length of service. This practice holds out less inducement for men to remain.

7680. Do you propose that in this case ?—I think it is worthy of consideration.

7681. Instead of giving different rates for different ranks ?—Yes.

7682. (*Sir J. Clark.*) With regard to age, do you not think that inspectors of hospitals might remain beyond the age of 60 ?—I think without compulsory retirement at 60 you would keep men so long in the lower grades that you would destroy all healthy stimulus. I will suppose the case of two regimental surgeons, one having served 35 years, and the other 34 years and a half ; the moment the one man had completed his 35 years you would require him, if the rule was partial and not general, to go on half pay—in the meantime the other man before he had completed 35 years' service might get a step in promotion, and on that ground, he might go on for 10 or 15 years ; I think that the man who was compelled to retire would justly think it neither fair nor just.

7683. (*President.*) If you limited the retirement to the lower ranks, it would be unfair. In the case of a man differing but a few days in service from another, one might come under the rule, and the other escape ? —Yes.

7684. Would you not have a lower age by compelling retirement from the executive rank as compared with what you would have from the administrative rank?—Yes ; I think after 30 years' service an officer is scarcely fit for executive duties; but instead of forcing him to retire I would rather force the administrative officer of 35 years' service to retire, and give the

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executive officer five years of administrative duty, by making a vacancy, and causing promotion.

7685. You would not make all retirement compulsory—you would have it permissive?—Yes, at an earlier period certainly.

7686. (*Mr. A. S. Stafford.*) At what period would you put permissive retirement?—After 20 year's service.

7687. (*President.*) Would you give different rates for 20, 25, and 30 years' service?—Yes; I do not think that the service benefits by an officer retiring after 20 years' service.

7688. If the service does not benefit by his retirement, why should you allow him to retire?—To benefit himself.

7689. (*Mr. A. S. Stafford.*) But would it not be an indirect benefit to the service by inducing a class of men to enter the service who would look forward to retiring after 20 years' service?—Yes; it would thus indirectly benefit the service and the department.

7690. In the meanwhile, if a man was well fitted for the service, it would be a direct loss?—Yes; and on that account I would not hold out any great inducement; I would give him a fair remuneration, but I would give him no great inducement to retire. I think after 25 years' service this view of the subject becomes changed a good deal, and I think after 30 years it is altogether changed, certainly after 35 years I think it would be for the benefit of the service that a man should go.

7691. (*Mr. T. Alexander.*) Do you think many men would retire after 20 years' service?—That would of course depend a good deal upon the amount of remuneration.

7692. (*Mr. J. R. Martin.*) Is it your opinion that a regimental surgeon is the most important medical officer in the army?—Yes.

7693. Do you think that he ought, after three years' service, to have conferred upon him the brevet rank of surgeon major, or earlier than that?—After five years at all events, or after a certain period of service; as promotion varies according to circumstances.

7694. Do you think that that would be gratifying to the feelings of deserving regimental surgeons?—Yes; I know it would.

7695. And that it would be an act of justice in itself?—I think so.

7696. (*President.*) To give brevet rank?—To give a step of rank; after 15 years' service he should not continue to rank as a captain; I think after 15 years service he should have the rank of major, and be styled surgeon-major.

7697. Do you hold that a first-class staff surgeon should have executive or administrative rank?—Executive. I think, as the rule.

7698. What would be the real distinction between his position and that of the second-class staff surgeon or regimental surgeon?—He would be very much like what a surgeon-major in the Guards is.

7699. Would it not be simpler (supposing the rank be not required as an administrative rank) to abolish it altogether, and give to every regimental surgeon and second-class staff surgeon the rank after so many years' service of surgeon-major with some increase of pay?—Yes, and the department would not then lose a grade.

7700. They would get a certain step, assuming the step to go by seniority after so many years' service?—They would have the same number of grades as at present, but they would be differently classed.

7701. Would it not give this advantage, that the director-general, in selecting for deputy-inspectors, would have a wider field from which to select, whereas now he can only select from 40 or 50 men, who are first class staff-surgeons, and then he could select from the whole class of regimental surgeons or staff surgeons, whether they have served the number of years requisite to make them surgeon-majors or not?—Yes; he would have a large field; but I think all the officers should be of that standing that would give them the grade of surgeon-major, and that the selection should be from that grade, except in very special cases.

7702. Would there be any advantage as removing one of the difficulties attending all promotions to have a step less?—You would not have a step less, but you would have the means of rewarding a regimental surgeon without taking him from his sphere of usefulness, as he might remain with his regiment as surgeon-major.

7703. You do not contemplate the abolition of the rank; all you wish is to make it an executive rank?—Yes, only that the grade should be differently classed—two administrative and three executive, instead of three administrative and two executive, or three as it were to look after two.

7704. If there were three executive ranks, how would you employ them?—I see no reason why they should not be employed as regimental surgeons. At the present time there are several, at least there are three or four, large depôt battalions in which there are three battalions, and several with two; with those battalions there are three or two second-class staff surgeons, according to the number of the battalions, and I think there would be an advantage in having one of those officers of that higher rank in such depôt battalions.

7705. His duties there would be partly inspectorial, would they not?—He would be surgeon of the first battalion, and as senior officer he might exercise the same supervision that a surgeon does over his assistant, but he would have his own duties to perform.

7706. If you had a first-class staff surgeon of executive rank, you would not require three second-class staff surgeons?—No, only two in the case of there being three battalions, and one if there were two battalions.

7707. Upon the whole, should you say it would be more advantageous to abolish the rank, merely giving to the regimental surgeon and second class staff surgeon the rank of surgeon-major after so many years' service?—I should not advocate, by abolishing the rank, that those officers who are now first-class staff surgeons should not be eligible for employment; they would then be all of the same rank, and should be just as eligible for employment, and have a preference to juniors.

7708. (*Mr. J. R. Martin.*) The staff surgeon being comparatively a young man, you are afraid that by confining his duties solely to administrative functions, he would lose ground as a professional man?—Certainly; and I think he would lose it very quickly.

7709. Is not that the complaint in respect to all the administrative grades in the service?—Yes; that they cease to be professional men.

7710. (*Mr. T. Alexander.*) Could not a surgeon-major have charge of a recruiting district?—Yes; certainly.

7711. And perform the same duties as a first-class staff surgeon?—Yes; I want to change the designation.

7712. By making first-class staff surgeons surgeon-majors, you would bring immediately on full pay all the first-class staff surgeons, and put them in charge of those battalions, and in districts?—Yes.

7713. If you do away with the first-class staff surgeons, would it not be necessary to increase the number of the inspectorial officers?—Certainly; there are many first-class staff surgeons who are employed in the colonies as principal medical officers, where there must be a superintending officer.

7714. (*President.*) You would have to employ some six or eight additional deputy-inspectors?—Certainly.

7715. (*Mr. T. Alexander.*) And that would induce well qualified candidates to enter the service, as there would be more prizes to be obtained by having more officers of the administrative ranks?—Yes.

7716. (*President.*) With regard to the half-pay, have you any suggestion to make with regard to the

proportion that that ought to bear to the full-pay ?—In a case where an officer is reduced to half-pay, I think he ought to receive a much larger proportion than he does at present.

7717. He does receive a larger proportion, does he not, than a man who is reduced on account of ill health ?—Yes ; a reduction in the establishment always carries with it higher half pay.

7718. But suppose this, which is generally the case, that the government can only meet the financial claim by a compromise more or less ; is it not far more important that any addition they can give should be given to the full-pay ranks, rather than to the half-pay ?—It might be so, but I think that those officers who have been placed on half-pay by reduction, against their wish, have a claim to consideration.

7719. But their position is only a temporary one ?—It is to be hoped it is so, but they may be in that position for many years.

7720. (*Mr. T. Alexander.*) And owing to that uncertainty they cannot turn their attention to anything ?—No, they cannot. If a man has completed that period of service when he is entitled to permanent half-pay, I look upon his being placed on half-pay as a very secondary affair.

7721. (*President.*) Did not your committee in the Crimea recommend that in some ranks the half-pay should amount to three-fourths of the full-pay ?—I think the committee in London recommended that in the case of reduction.

7722. Do you know what proportion that bears now to the full-pay ?—When I served as first-class staff surgeon my pay was 19*s.* ; my half-pay is 10*s.* ; then I lose all the allowances, which brings it down to very much less than what half of my full-pay is worth. Lodging money and servant's allowance, are not taken into account.

7723.—On the other hand, the pay being for service rendered, you cannot compare the claim of an officer for half pay, with his claim for full-pay ?—I think he ought to be fairly remunerated for the service he has rendered, when he is placed on half-pay for the convenience of the public.

7724. Was it your committee in the Crimea, or the committee in London, which proposed an increase in the rates of pay for each rank ?—It was the committee in London ; we did not make any suggestion of that kind.

7725. (*Sir .H K. Storks.*) What was the committee in London ?—I am perhaps not right in calling it a committee ; it was a certain number of medical officers who assembled at the request of the director-general. The letter forwarding the rates of pay can be referred to in the appendix to the report of Mr. Stafford's committee.

7726. (*President.*) Do you know this paper [*a paper being handed to the witness*] ?—I know nothing about it officially. I saw it, but I knew nothing about the drawing it up ; it was drawn up at Chatham without any knowledge on my part.

7727. (*Mr. A. S. Stafford.*) What committee do you refer to ?—I refer to a letter, to be found on page 314 of the Appendix to the Report from the Select Committee on the Medical Department of the Army, in 1856.

7728. (*President.*) Are you acquainted with the rates of pay, which are mentioned in that recommendation of the director-general ?—I do not, at this moment, remember the individual sums ; I know the general rate.

7729. Have you no suggestion to make with regard to them, as to their amount ?—I think there is room for a reasonable increase of pay, and I think the medical department will be quite satisfied with the recommendation contained in the documents accompanying the director general's letter.

7730. You have no knowledge of the cost which that change would entail upon the public ?—I have not.

7731. By what rule do you think that promotion ought to take place, from the rank of assistant-surgeon to surgeon ?—By strict seniority.

7732. Is it not by seniority now ?—I believe the usual and professed rule is local seniority, within certain stations and districts.

7733. (*Dr. A. Smith.*) What reason have you for stating that ?—From the evidence given before Mr. Stafford's Committee, I infer that it is local seniority ; I advocate strict seniority, according to the Army List.

7734. (*President.*) You were not aware that that rule applies only to vacancies which arise by death ?—I was not aware of that.

7735. As a matter of fact, we are informed by the director-general, that it is only in the case of vacancies created by death, that the seniority is confined to the station at which the vacancy takes place ?—I, of course, bow to that authority.

7736. In other cases, are you aware, that when a vacancy is created otherwise than by death, seniority on the Army List is invariably taken ?—I am not quite prepared to say that, it has not been my impression.

7737. (*Dr. A. Smith.*) If that has not been your impression, will you state any cases in which you have known that rule not to be observed, and give the names ?—I can mention two cases, which occurred to friends of my own ; in one case, the surgeoncy of the 66th regiment became vacant ; I cannot say exactly how.

7738. Where was the regiment at the time ?—The regiment was, at the time, at Quebec.

7739. Was that vacancy occasioned by the death of the surgeon ?—That I cannot say.

7740. If I tell you that it was not so occasioned, would you consider that a case in which the senior in the command should have succeeded to it ?—No ; the senior in the army, on the principle just mentioned.

7741. (*President.*) Was it the senior in the army who succeeded to it ?—No : Dr. Tupper succeeded to it.

7742. (*Dr. A. Smith.*) How many were senior to him in the army ?—There was a senior assistant surgeon, Mr. Ewing, in Nova Scotia at the very time.

7743. (*President.*) In this case the person who did succeed was neither the local senior nor the senior in the army list ?—No, he was not. Another case occurred to a friend of mine, Dr. Murphy, of the 80th regiment. A vacancy occurred in that regiment by the promotion of Dr. Taylor on the 3rd of March 1855, Dr. Murphy being the senior assistant surgeon of the regiment ; the officer who was promoted to the surgeoncy was Mr. Irwin, who, I find by the army list, was five months junior to Dr. Murphy.

7744. Was he on the station ?—It was in Dr. Murphy's own regiment that the vacancy occurred.

7745. Was the officer promoted on the station ?—He was at home, I think, and the regiment was on its way from India.

7746. That was a vacancy in which army seniority would have come in ?—Yes.

7747. And the gentleman who was brought in was not the senior ?—He was five months the junior, and he was brought into the regiment in which the other officer, five months his senior, was serving.

7748. (*Dr. A. Smith.*) Was the 80th regiment at that time on the establishment of the East Indies, or on the establishment of this country ?—It was on its passage home, and Mr. Murphy was with his own regiment ; and as the vacancy occurred in his regiment, he must have been on the spot.

7749. (*Mr. T. Alexander.*) Where did the man who succeeded to the vacancy come from ?—I do not know. I never heard of him before.

7750. (*Sir H. K. Storks.*) Was Mr. Irwin in India ?—No. I believe he was serving at home. On the day that a regiment embarks from India, I think that they are struck off the Indian establishment. I know there is no longer Indian pay or allowances.

7751. (*Mr. T. Alexander.*) Dr. Murphy was senior to the other wherever he came from ?—Yes, five months senior.

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7752. (*President.*) Were you aware that there is a different rule in operation as to regiments on their passage to or from India ?—There are no defined rules that I have ever seen.

7753. The result of promotion by local seniority, of course, is to interfere very much with army seniority ?—Yes ; it may considerably.

7754. And it may be as irregular as selection would be ?—It might, as there is no defined and published roster for foreign service ; it certainly opens a door to one man being promoted over another.

7755. What is the promotion from the rank of surgeon to that of first-class staff surgeon, at present ?—I cannot say, but I believe that it is selection, or seniority and selection combined ; it is not strictly seniority.

7756. (*Dr. A. Smith.*) Are there any other cases that you would wish to mention ?—There was a gentleman who was promoted at a very early period of his service, Dr. Matthew, at Gibraltar, and I know that he was promoted over the heads, I am afraid to say of how many assistant-surgeons. I think I have heard that there were seniors to him in the Mediterranean at the time. I think he was promoted in September 1849.

7757. Mr. Matthew was sent to the Emperor of Morocco to attend upon him, and the reports that reached this country and the government were so strong in his favour that the government recommended that he should be promoted ; and under these circumstances, the then head of the department felt that it was his duty to obey the wishes of the government. Are you aware of that ?—No, I am not aware of that, and I doubt whether the department generally is aware of it.

7758. Are there any other cases that you wish to mention ?—Mr. Francis Reid was promoted very early into the 91st regiment at the Cape.

7759. Are you aware that he was appointed to a death vacancy,—he being the senior in the Mauritius when the death vacancy occurred ?—The regiment was at the Cape.

7760. Still Mr. Reid was serving in the Mauritius ; and the vacancy having occurred in the regiment, he proceeded to the Cape—are you aware that he was the senior in the Mauritius ?—He might be senior at the Mauritius, but there were two or three in Ceylon who were senior to him.

7761. Are you aware that that has nothing to do with the Mauritius in the case of death vacancies ?—No.

7762. (*President.*) You are not made aware of the limits of the stations ?—No ; I know that in my own case a death vacancy occurred in the Mauritius ; I was serving at Ceylon, and I got the promotion.

7763. You conceived from that that the Mauritius and Ceylon were the same ?—Yes, the Mauritius, Ceylon, and the Cape.

7764. (*Mr. J. R. Martin.*). As being within one command ?—No, not one military command.

7765. (*Sir H. K. Storks.*) Is not Mr. Reid's promotion accounted for ?—There were two seniors to him in Ceylon.

7766. (*Dr. A. Smith.*) Are you aware that on such a station as Mauritius, if a death vacancy should occur and there is no one but very young officers who are not eligible, either from length of service, according to the regulations, or from their not having served a sufficient time to justify their being promoted, that a person would be taken from another station to fill the vacancy ?—There was an officer at the Mauritius who was very little junior to me.

7767. He was junior to you ?—Yes.

7768. By how much ?—About a year.

7769. (*Mr. J. R. Martin.*) Referring to your recent answers, do you not think it highly desirable for the good government of the medical corps, that all the regulations affecting the interests of its officers should be published for general information ?—Yes, and clearly defined.

7770. (*Dr. A. Smith.*) Is there any other department in the public service that has its regulations published and clearly defined ?—In the case of regimental promotion, I never heard of any doubt.

7771. (*President.*) Can the Commander-in-Chief make any promotion except according to the warrant ?—I am not aware that he can, except brevet promotion. When I served in a regiment, I never knew the slightest doubt as to who would get any vacant step.

7772. The Commander-in-Chief can make promotions by selection under certain circumstances, but that selection is regulated by the royal warrant ?—Yes, of October 1854, I think.

7773. (*Dr. A. Smith.*) Can anything different occur in the medical department ? Can the head of the department make promotion without its being sanctioned by the Commander-in-Chief, and the secretary-at-war ?—I cannot say.

7774 (*Mr. J. R. Martin*) Has not the non-publication of the rules and regulations of the medical department caused much dissatisfaction in the corps ?—It has caused very great dissatisfaction.

7775. (*Mr. T. Alexander.*) All the rules regulating the roster, and the fixed stations abroad, ought to be classified and published ?—They ought to be clearly defined and published.

7776. Is not the want of those regulations being clearly laid down considered a great grievance by the medical department ?—Yes.

7777. If those rules were clearly laid down, do you not think that candidates would be induced to enter Her Majesty's service ?—I think it would be some additional inducement.

7778. (*Mr. J. R. Martin.*) They would enter the service with a better understanding of their future condition ?—Yes, they would know exactly what they had to expect, and what they had not.

7779. (*President.*) At the present moment the officers in your branch of the service are not acquainted with the rules generally speaking, for example, those which have been explained to you to-day ?—No, I was not aware fully of the rules of promotion, except from what I had gathered from the evidence before Mr. Stafford's committee and other accidental sources.

7780. You were not aware of the exact limits of the circles within which seniority is to rule, and you were not aware of the distinction between death vacancies and others ?—No, I was not aware of the distinction between Ceylon and the Mauritius, for instance.

7781. Do you consider that promotion to administrative rank should be by selection or by seniority ?—I think by seniority as a rule.

7782. In that case you would have no rule but that of seniority pervading the whole service ?—I would not say that cases might not arise in which the service rendered was so great, and the officer's merits so unmistakeable, that an exception should be made for the good of the service.

7783. Even apart from that, is it not important, in order to get youth and physical energy into the higher posts, that selection should be made ?—I think, that with compulsory retirement, one objection to seniority would be removed.

7784. Not if you found it necessary for financial reasons to limit the amount of the compulsory retirement?—As long as the department is without compulsory retirement, there will always be many old men in it.

7785. It is quite clear that the seniority system is compatible with youth in the upper ranks if you make the retirement liberal enough, but without will not the department get so aged in the upper ranks that it will become inefficient ?—I would recommend special promotion for special merit and service, and equally non-promotion where there was clear inelegibility or unfitness.

7786. (*Mr. J. R. Martin.*) Are you not aware that the question put by the president applies strongly to officers of the medical department in the Indian army, and that it is paralysed by an exclusive system of promotion by seniority ?—Yes ; but I understand that

there is a prospect of compulsory retirement being introduced into the Indian army. The cases of selection in the East India Company's service are very rare; though the power is retained, it is not exercised in one case in twenty.

7787. (*President.*) It is on account of the jealousies and heart-burnings which the system of selection creates that you object to it?—Yes, very strongly, and for other reasons. I think, in the first place, that it is a system under which there is always a liability of doing great injustice to deserving officers, and I think it is a system that will always create dissatisfaction. I think also that it is a dangerous power to exercise.

7788. Does not the system of seniority operate with great injustice upon deserving officers; may not a very deserving officer be languishing without promotion, while an inferior officer may get promotion over his head?—That may be.

7789. (*Mr. J. R. Martin.*) Does not an absolute rule of seniority in promotion overlook the interests of the soldier?—I only advocate it as a rule, not as an unexceptionable rule, where the service would clearly benefit by departing from it.

7790. Is it possible to take the absolute rule of the muster roll as the ground of promotion to any office?—I think decidedly if the first senior officer is fit for the purpose he should be taken.

7791. And when he is not fit, ought he not to be superseded?—I think there ought to be certain defined rules, under which such a case would be met.

7792. (*Sir H. K. Storks.*) Who is to decide whether a man is fit or unfit?—The Commander-in-Chief.

7793. Who is to advise the Commander-in-Chief?—He ought to have the necessary documents laid before him.

7794. Who is to send them to him?—The head of the department.

7795. Who is to furnish them to the head of the department?—In a regiment the commanding officer would be as good a judge as anybody else, whether a surgeon was physically and mentally efficient.

7796. (*President.*) He could judge of the zeal and attention to his duties displayed by an officer, but not of his skill as a medical man?—He could judge by the result, which is the best test of all.

7797. (*Mr. A. S. Stafford.*) But there may be cases with regard to climate, and with regard to strategetical reasons for occupying an unwholesome situation, with regard to a badly-built hospital, and the difficulty in supplying drugs or medical comforts; all these may be entirely independent of the medical officer, but they may affect considerably the number of his cures?—I think that an intelligent commanding officer would always take those things into account.

7798. (*Dr. A. Smith.*) With reference to one of your late answers, when you say that the Commander-in-Chief ought to select, do you mean it to be inferred that the Commander-in-Chief is more capable of judging of what constitutes a good medical officer than the head of the department?—No; he would act upon his recommendation.

7999. Do you mean to say that the Commander-in-Chief is more intelligent and more capable of judging of the merits of a medical officer, and his eligibility for the promotion, than the director-general ought to be?—No, I do not.

7800. Then if you do not, do you not, by the observation you have made, leave it to be understood that the director-general is more likely to be an unjust man, and to promote unfairly, than the Commander-in-Chief?—I think that the Commander-in-Chief ought to exercise a control over all appointments on the recommendation of the director-general. In an answer given by the Duke of Cambridge before Mr. Stafford's committee, he says, that his authority is merely nominal; he is asked at Question 3676: "Your Royal Highness is probably aware that the question of promotion, except with regard to regimental surgeons, rests entirely with the director-general?" and his answer is "under the authority of the Commander-in-Chief." He is then asked: "But the evidence which has been given before this committee has shown that the exercise of that authority is merely nominal?" and his answer is: "I think it ought to be more than nominal; I think that if that is so, it would be well that the Commander-in-Chief's authority should be more shown than it is at this moment. As I understand the question, it is this: that supposing a medical officer to be promoted out of his turn, it might appear to be an act of favouritism on the part of the chief authority of the medical department. I think that that would be obviated if, in cases of that sort, the director-general were to explain to the Commander-in-Chief most fully why he had promoted one man over the heads of others, and that the final decision should rest with the Commander-in-Chief." I cordially agree with that answer of the Commander-in-Chief.

7801. As you say that you do not consider that the Commander-in-Chief is more able or more likely to be capable of forming a proper opinion as to whether a medical officer ought to be promoted, do you, as you propose that the matter shall be submitted to him to decide, mean it to be understood, that you have not confidence in the sense of justice of the head of the department; or, that you think the Commander-in-Chief, as he holds a higher appointment, is more likely to have a regard for justice than the head of the department?—No, I do not say so.

7802. Then why would you take it out of the hands of the director-general?—Because I think the Commander-in-Chief ought to be the head of the medical department as well as of every other portion of the army. As far as regards the question of patronage, I should wish him to exercise only a controlling power, and not to take the initiative.

7803. What evidence have you that he does not exercise that controlling power at present?—I do not know what he does at present, but I refer to the answer His Royal Highness has given, as above quoted.

7804. A question was put to me, to ascertain whether the Commander-in-Chief had ever refused to confirm a recommendation of mine, and I said I thought he never had; and an impression seemed to be produced by that, that therefore the exercise of his power was merely nominal, which was an unjust impression; although I said that he had not done so, might it not have been, that he saw no occasion to do it?—Most certainly; I do not question that for a moment.

7805. (*President.*) Your reason for thinking that the exercise of the authority of the Commander-in-Chief is only nominal, is founded upon his own assertion to that effect, which you find in his evidence?—Yes.

7806. You conceive, do you not, that he must know best how that matter stands, and how his own authority is exercised?—Yes. Certainly.

7807. You do not pretend to know more of the matter than he does?—Nothing but what the report of Mr. Stafford's committee affords me.

7808. To go back to the question of seniority, you say that heart burnings and jealousies are produced by a system of selection. Is not stagnation produced by a system in which seniority alone is the rule of promotion?—Yes; without compulsory retirement, I feel bound to acknowledge that seniority would be very difficult and injurious.

7809. Compulsory retirement will give opportunities for promotion, and it will keep men young; but it does not give the stimulus that competition does?—In the other scientific corps of the army they trust to seniority.

7810. Do they not suffer extremely from that, by the very great age of the officers in the upper ranks, and has it not been attempted to remedy that by a system of retirement which is so inordinate in amount that it cannot be extended to the line?—No doubt it involves very great expense.

7811. Does not great practical inconvenience result from it, where you have, for instance, two armies together in the field, that your English artillery officer

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is junior though a much older man ?—They generally manage to select young men by some means without interfering with the regimental promotion.

7812. Do you know how the Duke of Wellington promoted Sir Alexander Dickson in Spain ?—Yes, I know very well the whole circumstances.

7813. He got him made a Portuguese general ?—Yes.

7814. (*Mr. J. R. Martin.*) In scientific bodies has it not been found that torpor and inertia have been produced when men have been promoted on the rule of the muster roll rather than on account of scientific attainments?—Yes, there is a great deal to be said against seniority *in toto*. I am advocating it as a rule, but not a rule to which there are to be no exceptions.

7815. (*President.*) If you selected from 100 men, is it not 99 to 1 against seniority giving you the best man?—That is, supposing you have only a few good men in the 100.

7816. But it is 10 to 1 against its giving you the 10 best men ?—Yes.

7817. (*Mr. J. R. Martin.*) You would always take a man as he rises on the muster roll, by the rigid rule of seniority ?—Something might be done to obviate that by local temporary rank ; but I have not advocated the rule without exceptions.

7818. (*Sir H. K. Storks.*) Would it be by selection ?—Yes, it would be by selection under clearly defined rules.

7819. (*President.*) If seniority were strictly enforced in the executive ranks, and it were made seniority according to the army list, and not according to districts, and without any exceptional rules as to death vacancies or other vacancies, and if the selection made for the administrative rank were made by recommendations given in to the Commander in-Chief of the army, accompanied in each case with the grounds of the selection, do you think the service would be then satisfied ?—Provided no good men were passed over ; selection is quite liable to make mistakes.

7820. (*Mr. J. R. Martin.*) If the rule of selection were not subject to human error, it would then be a perfect system ?—Yes ; but we cannot hope for that.

7821. (*President.*) If it was conducted as I have stated, and the whole matter were to be fixed by warrant, like the promotion in the combative ranks, at any rate, that amount of dissatisfaction which arises from ignorance of the rules by which the director-general is governed would disappear ?—Certainly.

7822. (*Sir H. K. Storks.*) Would the giving of local rank be a proper thing among the medical officers ?—It would be more proper than promoting a man *bonâ fide* over the heads of a large number of others.

7823. Would that be a good system, do you think ?—I see no objection to it.

7824. When an officer has been promoted to his service, he again reverts to the inferior rank. An officer who has been inspector-general in Canada becomes to be deputy inspector when he comes to England ?—It might not be very agreeable to him.

7825. Is it not then an unpopular thing?—It is so far unpopular because it invariably leads to *bonâ fide* promotion, and therefore a number of officers who think themselves quite as much entitled to promotion have been disappointed.

7826. In what instances has it led to promotion where local rank has been conferred ?—Mr. Mouat was promoted locally, and, I understood some time ago that he is to be brought in on full-pay as deputy inspector-general.

7827. Has he been brought in ?—Not yet—he is now on the half-pay of a staff surgeon of the first class. I find I was wrong in saying that no case had yet been confirmed. Dr. Ligertwood's local rank was confirmed ; he is now second-class staff surgeon.

7828. (*Dr. A. Smith.*) Are you aware that Dr. Ligertwood was specially recommended for promotion, but it was found he was under five years' service, and therefore not eligible for the rank, but the Minister for War said he should hold local rank until he had served the period necessary, when his rank as staff surgeon of the second class should be rendered substantive ?—I was aware that he had not completed his period of service, viz., five years.

7829. He was to be confirmed in the substantive rank the moment he had completed that period ?—I did not know that.

7830. (*President.*) In many of those cases what may appear to be confirmation is this, that a man does not get local rank unless he is a man of some eminence ; it is given for special purposes ; he is selected as a man of high distinction ; you may look upon his subsequent rank as a reward for his service ?—Yes ; but those officers who have been passed over feel that it has been unfair to them.

7831. As in the case of any selection ?—Yes ; with very rare exceptions.

7832. If the man is a better man, there is nothing unjust in it ?—No ; if he really is a better officer.

7833. You object to putting any man over another man's head ?—It ought to be avoided if possible. Nothing but the good of the service can justify it.

7834. Can any other promotion be carried on in that way. Do you suppose we should have the same men in Westminster Hall, if the judges were appointed by seniority ?—It is scarcely a parallel case. I think if a man has performed his duty faithfully and well, he has reason to complain that another is put over his head; particularly if the other has done no more.

7835. (*President.*) Do you think you could by brevet rank reward good service ?—Yes.

7836. And also by good-service pensions ?—Yes.

7837. How would you give them ?—For general good service.

7838. Would you give it irrespective of length of service or not ?—Not except in cases of very distinguished service.

7839. What restriction would you put as to service ?—I think a man might be required to serve 12 or 15 years.

7840. So that what you would give as a reward, because you wish to maintain seniority as to promotion, would become a reward for seniority as well as for service, if you exact 15 years from a man who is to receive a good service pension ?—In cases of very distinguished service I would make an exception ; but, even with the above restriction, there would be selection from a certain class.

7841. When you have seniors for promotion, ought not the good-service pension to be given strictly for distinction, without any reference to length of service whatever ?—I think, except in cases in the field, you must prove what a man's service is.

7842. (*Sir H. K. Storks.*) You would not give a good-service pension by seniority ?—Not strictly. In all cases of special service, this would be one fair means of rewarding it.

7843. Would not that be a fair ground for promotion as well ?—Yes ; but then you must reward a fortunate man at the expense of an unfortunate one, unless you give brevet rank.

7844. What advantage would brevet rank confer ?—Superior social position.

7845. You would not allow an executive officer with brevet inspectorial rank to inspect ?—Certainly not.

7846. (*Dr. A. Smith.*) You stated that when a person was conscious that he had discharged his duties well, and another was appointed over him he might justly feel sore ; who is to be the judge whether that other person had really done his duties equally well with the one that was passed over ?—That is one of my objections to special promotion—you cannot prevent men having those feelings, and that causes discontent.

7847. (*President.*) Seniority is open to that ; you would not promote a man who was notoriously unfit ?—No ; I would have promotions for specially distinguished service, and non-promotions for unfitness.

7848. That is, selection only ; all you require for your selection is very strong cases ?—Yes ; and that

the rules under which those selections shall take place should be known in the department.

7849. (*Dr. A. Smith.*) Are you aware that out of the ten officers whom I generally see about twice a week, not one of them enters my office and has conversation with me in reference to their claims that does not maintain that he is No. 1, of his grade, and that all in that grade are inferior in point of talent to him?—That is human nature; and shows all the more the necessity for defined rules.

7850. That being the case, can a man be a judge in his own case, whether he merits promotion or not?—I think, making all due allowance for a man's personal bias, he knows pretty well whether he has done his duty as well as others, and whether or not he has been rewarded.

7851. (*President.*) Cannot a man be a pretty good judge as between any two men, but not between himself and another?—Certainly.

7852. Reduction to half-pay in consequence of the termination of the war and the restoration to full-pay from half-pay, goes by seniority, does it not?—I should say not.

7853. (*Dr. A. Smith.*) Have you never been told by me, that according to the total length of service officers on half-pay are to be restored to full-pay?—Yes. I have been told so verbally.

7854. (*President.*) Are you aware whether or not it is the invariable practice to make reductions and restorations depend upon the length of service of the officers to be selected?—That rule has not been strictly followed. I know exceptions have been made.

7855. (*Dr. A. Smith.*) Will you mention any instances where a man has been restored to full-pay who has not had the longest general service?—Dr. Hadaway, Dr. Macdonald, and Dr. Gordon, have been restored to full-pay, and Dr. Hume is still on half-pay, he is senior to them in the service, and senior to some of them in rank also. I find, in the case of second-class staff surgeons, that William Braybrooke stood second and he is restored to full-pay first.

7856. Who was senior to him?—Mr. Brush.

7857. Are you aware that Mr. Brush is on sick leave, and totally incapable of serving?—I find that Mr. Powell stood fifth in actual length of service; he was restored fourteenth.

7858. Are you aware that Mr. Powell was put on half pay on account of bad health?—No.

7859. (*President.*) Have you any other cases?—Mr. Fyffe stood fifteenth, and he has been restored second; Mr. McArthur stood seventeenth in actual service, and he has been restored third.

7860. (*Dr. A. Smith.*) How do you mean restored third?—Braybrooke, Fyffe, and McArthur were all restored to full-pay in the same Gazette in November 1856. I have classed them 1, 2, 3, according to their length of service.

7861. Were they restored before they ought to have been restored?—Mr. Black stood 10th, and he was restored 9th; Mr. Hanbury stood 7th, and he was restored 4th.

7862. Seventh in point of general service?—Yes; Mr. Macbeth stood 8th, and he was restored to full-pay 5th; Mr. Sparrow stood 9th, and he was restored to full-pay 6th; Mr. Blunt stood 10th, and he was restored 7th; Mr. Crerar stood 13th, and he has not yet been restored.

7863. (*Sir H. K. Storks.*) Are those surgeons or assistant-surgeons?—Second-class staff surgeons.

7864. (*President.*) Those persons who were omitted may be officers who are on half-pay for ill-health.—They have since been restored, and 12 men senior to Mr. McArthur, who was restored in November 1856, have since been restored to full-pay.

7865. Have you taken seniority in the rank in every case, or seniority in the whole service in all ranks?—Those officers had only been in one rank before; I take seniority according to actual length of service.

7866. But their seniority according to actual length of service does not always tally, even in the rank of surgeon?—No; I find they stand here in this way: Mr. McArthur according to actual length of service stands 17th; according to seniority in rank he stands 8th.

7867. That is to say, although the assistant-surgeons are promoted to surgeons by seniority, yet the system of districts operates so capriciously upon officers that their seniority is lost sight of, and their army service is lost sight of in their promotion to surgeoncies?—Frequently; this officer, for instance, stands in one case 8th and in the other 17th. Then there were several officers in my own grade who were kept on full-pay, junior to me both in rank and service.

7868. (*Dr. A. Smith.*) Will you name them?—Mr. Stone is one, Mr. Paynter is another, and Mr. Wood is another.

7869. (*President.*) Do you approve of the system of counting officers' rank, not by their seniority and the dates of their commissions within their rank, but by the whole length of the service?—I think it does frequently great injustice to officers.

7870. On the whole it approaches nearer to your system of seniority a good deal?—In my own case, several of those ten men who are said to be senior to me, were in England and in the Mediterranean when I was promoted over their heads. I have always felt if I was promoted over them, then, in justice, I deserve to have the advantages of that position still.

7871. That is, where selection is made upon good grounds you think it ought to be permanent?—Yes; officers ought clearly to have the advantage of it ever afterwards.

7872. You stated a little while ago, that it depended upon the roster of foreign service—what do you apprehend to be the rules by which officers are sent on foreign service?—I do not know.

7873. The appointments to chief commands in war are by selection?—Yes.

7874. That, I apprehend, you do not object to?—No, I do not.

7875. The responsibility is so great that you cannot appoint a man by seniority to be the head of the medical department of an expeditionary force?—No; not in special cases.

7876. What is the case with regard to ordinary service in the lower ranks; do they go by turn, or how?—There are no defined rules that I know of.

7877. (*Dr. A. Smith.*) Do you not believe, from the experience you have had in the service, that, generally speaking, officers are sent on foreign service according to the length of time they have been at home?—Yes; but if an officer was to consider that he was out of his turn when ordered to go, I do not know that he would have any rule to fall back upon, to show that he was not first for foreign service.

7878. There has been a practice long observed, at least for the last forty years, and do you think that it is not the rule almost invariably to send an officer of the grade who has been longest at home on foreign service before one who has been but a short time at home?—I think that any return, including officers of the same standing, would show a very different proportion of home and foreign service in many cases.

7879. You are aware that we do not calculate the number of years a man has been on foreign service, say that A. and B. arrive to-day from foreign service; they are generally considered as the last of their grade to be sent on foreign service again without reference to the length of time they may have served previously abroad?—I do not know what is the rule.

7880. Have you seen many instances to the contrary?—There were two officers,—one came home before me, Dr. Humphrey, who had served in the Crimea, and served for a considerable time. During the time he was there, there were several deputy inspectors at home, who are still at home, while he is in Nova Scotia, and has been for some time.

7881. Name them?—Mr. Carter, Mr. Bell, and Mr. Gibson. Mr. Lawson also is gone to the West Indies.

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7882. You have not shown any that had been longer at home?—Mr. Lawson went to the West Indies within a few weeks after he had been at Scutari. Mr. Bell had been at home for some years, I think.

7883. Are you aware that Mr. Bell is the senior officer in the department, and a man who, if this commission do not lead to any change, must of necessity become an inspector general, of local rank, and ought to have been a week ago; therefore, under those circumstances, surely you would not consider it just to the service, or to Mr. Bell, to send him to a foreign station, and to bring him home again in three months?—I was not aware of that; but there is an officer above him.

7884. Who?—Mr. Barry.

7885. Are you aware that there are more than two local inspector-generals to be made?—I am not aware of that; I am aware that there are two inspector-generalships, which will be vacant this year; Dr. Scott at Malta, and Dr. McLean in Dublin; I believe five and three years is the usual time.

7886. Are you aware that Mr. Dartnell, who had been only a short time at Chatham as the principal medical officer of that station, where it is generally considered undesirable to change the principal medical officer in a shorter time than three years, was, in consequence of his being senior, notwithstanding warned to go abroad, in order to make a place for one of the officers who was returning from foreign service?—Mr. Dartnell, I know, had a very long period of home service.

7887. Are you aware that he was removed?—I am aware that he was removed from Chatham.

7888. On account of being longest at home?—I do not know; I know that he had been a long time in England.

7889. (*President.*) Your complaint is, that there are no published rules by which the service know by roster when service will fall to their turn?—Clearly.

7890. (*Dr. A. Smith.*) Were you not aware, when you were at Chatham, that in the principal clerk's office there was a small list, containing perhaps a dozen names of officers first for foreign service?—I do not remember any list of officers of that kind in 1838.

7891. (*President.*) Is that a list which is hung up in all the hospitals, or only to be seen by officers who happen to be stationed at Chatham?—I do not recollect seeing the list.

7892. In large hospitals, it could not be done, but Chatham is a depôt where officers are concentrated to fill vacancies abroad, therefore Chatham is the only place where a roster of that kind could be of any avail?—If it existed in 1838-9, I have no recollection of seeing it, I have never served at Chatham since.

7893. (*Sir H. K. Storks.*) Could you find how you stood on the roster for foreign service by application to the Director-General?—I cannot answer that question.

7894. (*Dr. A. Smith.*) Do you know of any person who has asked me when his turn for foreign service would come, and I have refused to tell him?—I do not know of any such circumstance.

7895. (*President.*) Do not you think that the conditions of the service ought to be made known to officers without personal application?—I think so.

7896. (*Sir H. K. Storks.*) You think that a roster should be kept and published?—Yes, and the stations for each grade, the date of the arrival in England of officers, and the order in which they stand for foreign service.

7897. (*President.*) But with the power of departure from that in time of war?—Yes, that is a special case. I would also respectfully say, that the period of foreign service ought in all cases to be limited.

7898. (*Sir H. K. Storks.*) Is it not limited now?—No, it is unlimited.

7899. (*Dr. A. Smith.*) How would you then propose that the list should be published?—I would propose stations for each grade, then a nominal list of officers as they stood, with the date of their return; and from that an officer would see at a glance where he stood for going out—of course casualties might occur when an officer might be obliged to go sooner than otherwise; but with a defined period, officers would have a good idea when their turn would probably come.

7900. Would you propose that a list should be circulated among the medical staff officers wherever they were?—It should be kept at the Medical Board in London. It should be printed, showing when an officer became first or second for foreign service. I think that is done in the royal artillery.

7901. Are you aware at the present moment that the assistant-surgeons, the junior officers at Chatham, would say, if you asked them, who was the first to embark for foreign service, "I am" or "I am not"?—That was not the case when I was at Chatham in 1838. I have known an officer walking about in the morning, and without the slightest idea of leaving be under weigh in the afternoon for the West Indies.

7902. (*President.*)You said as to promotion that the director-general must be informed of the character of the officers serving under him by reports; do you mean confidential reports?—Not secret reports.

7903. Do you mean that a report though not published should be communicated to the officer affected by it?—I think the principal medical officer if he can communicate nothing favourable or anything unfavourable, ought to let the officer know.

7904. Is it the general practice to do so?—I believe not.

7905. It has been stated by one officer holding an inspector's rank, that he invariably, whenever he made an unfavourable report, communicated the substance of it to the officer charged?—It must depend upon the principal medical officer; I think every man ought to do it.

7906. (*Dr. A. Smith.*) Do you not think, from your experience, that inspectorial officers who were anxious to be popular, and to enjoy the good opinions of the junior officers, unless they were compelled to do it, would never report unfavourably of officers?—They would not be fit for their positions. In giving a confidential report the principal medical officer ought to refer to professional points chiefly.

7907. (*Mr. A. S. Stafford.*) Are you aware that it has been stated by General Wetherall that at the Horse Guards it is the system to communicate to officers the substance of reports by which they are affected?—Yes; I know that is the system.

7908. You wish to see it introduced into the army medical department?—Yes; I know a case where a most unjust charge was brought by a commanding officer against his regimental surgeon; the moment it reached the general of division he brought it to the notice of the Commander-in-Chief, who ordered the deputy inspector-general to investigate the matter and report upon it, and it turned out that the officer deserved great credit instead of blame. If that report had been made by the principal medical officer it would have been more secret.

7909. (*President.*) The officer affected might never have heard of it?—No.

7910. (*Dr. A. Smith.*) If it had been made by the inspector-general to the director-general, do you infer that the officer never would have heard anything about it?—I think in your evidence you said that might take place. At question 357, you were asked, "Therefore "there may be charges brought against medical officers "who are perfectly guiltless, but which may stand as "bars to their promotion, and which charges they may "never hear of?"—and your answer is, "There might "be such, but I do not think there are such."

7911. (*President.*) Read the next answer?—"But "according to the working of the system there might, "because as you alone are the court of appeal, as far "as promotion goes, upon those scientific points the "charges against those gentlemen would never be "known to them, but would be silently operating to

" their injury, when the question of competency and " fitness for promotion should come before you ?"— " And his answer is, " I think in that case they would " be known to them, because I should tell them."

7912. (*Dr. A. Smith.*) Do you assume that the director-general of the department is a man regardless of justice ?—No ; it is simply in your own answer that I infer it might be so.

7913. (*President.*) I understand it thus, that there is a specified rule at the Horse Guards, that the substance of the report shall be communicated, but no such rule exists in the medical department, though it is the practice of the director-general to do so ?—Yes.

7914. Are you not aware that the Commander-in-Chief never interferes with reference to confidential reports made against medical officers ?—I was talking of the Commander-in-Chief in Madras ; it was referred to him, and it was investigated on the spot.

7915. (*President.*) Do you know of any case where an inquiry was made in a similar manner with regard to a confidential report made by a medical officer ?—I think Dr. Anderson's promotion was suspended for some time ; he was subsequently promoted and had his promotion antedated. I understood it was in consequence of some unfounded report that had been made from the Cape. He belonged to the 8th hussars.

7916. (*Dr. A. Smith.*) Are you not aware that his promotion was suspended on account of his being in bad health ?—He was in the Crimea with his regiment.

7917. Are you not aware that as soon as he was in a state of health to admit of his being promoted, he got the first vacancy, and had his commission antedated ?—His commission was not antedated for some time. I have a pretty clear impression that Sir John Hall told me that reference had been made to him with regard to Dr. Anderson. His first promotion occurred in May, I think, and it was some time before the subsequent antedating took place. I think not till August.

7918. (*Mr. J. R. Martin.*) Generally speaking, is it the impression in the service that promotions are made on the ground of fairness, or not ?—I should be very sorry to say anything to the contrary, but I may say that officers often feel that they have had a fair claim to promotion, and they have been disappointed in getting it.

7919. (*President.*) Is it not your opinion that it is ignorance of the rules upon which promotion is conducted which gives rise to misrepresentations and suspicion, but which may very often be entirely unfounded ?—Yes.

7920. Have you any other observation to make on the subject of reduction or the confidential reports ?—I would wish to say, with regard to the reduction ; that in December 1854, I was promoted from the 51st regiment. At that time there were several officers in England. Mr. Gammie was in England, Dr. Templeton was in the Mediterranean, Mr. Denny was in the Mediterranean, Dr. Henderson was in the Mediterranean and I was promoted over those officers and sent out to Turkey ; and at the end of the war I was within about one third of the top of the list of staff-surgeons of the first class. I came home without supposing that the reduction could reach me ; but when I arrived I learned for the first time that a new rule had been introduced under which, if I had known it, I would not have accepted promotion, that instead of the reduction being from the bottom of the list, the reduction should be according to seniority in actual service ; instead of the junior in rank, the junior in actual service. By that rule I came within the reduction, while several of those officers who were in the situations I have mentioned were retained on full-pay, and the others, as I infer from what has passed, stand before me for restoration to full-pay. In the first place I feel that the introduction of the new rule was more considerate to one class of officers than to another.

7921. When you say it was a new rule, had it not been the rule previously ?—The invariable rule of reduction that I have seen followed has been strictly from the bottom of the list according to juniority in rank.

7922. There was no published rule to that effect ? —It was the practice of the service.

7923. (*Dr. A. Smith.*) There having been no opportunity of making a reduction in the medical department of the army since the peninsular war, are you aware what the rule was on that occasion ?—No.

7924. Are you aware that upon that occasion no rule was observed ? There were certain stations in England,—for instance, Colchester was one, Chichester was another—where there were general hospitals and when the sick were exhausted in those general hospitals, the medical staff of those hospitals were the officers that were at once reduced ?—I think, if any rule of that kind is to come into operation, the officers should be made aware of it before they are promoted. I do not know what took place after the peninsular war.

7925. Are you aware that the reduction which took place on the termination of the Crimean war was the first instance in which, in modern times, any rule could be applied so as to regulate reduction ?—It was the first instance since I entered the service in which any reduction has taken place.

7926. (*President.*) Was there no reduction after the last Chinese war ?—No.

7927. (*Dr. A. Smith.*) Are you aware that from necessity there were a very great number of medical officers passed over in the promotions that took place early in the Crimean war, who would have been very greatly, and in my opinion most unjustly, treated, if when they, equally eligible and perhaps more so, arrived in this country, and became available to send to the Crimea, having more claim to be promoted to the rank of staff-surgeons of the first class than those that were, had been put on half-pay, and the comparatively young officers who from necessity had been promoted had been kept on full-pay ?—I am speaking of those that were at home as available for promotion ; then, a afterwards, Dr. George Taylor was at Hounslow.

7928. Are you aware that Dr. Taylor, though senior to you, was not eligible for promotion, being a surgeon in a cavalry regiment ?—I have understood that he could have had promotion in March 1854, if he would have exchanged from the cavalry ; and if he did not exchange, I think he should suffer and not I.

7929. Are you aware that five or six artillery medical officers, at the time that the amalgamation took place, sent forward a representation to the Commander-in-Chief demanding that if the amalgamation was to take place, they were not to be subject to be promoted out of the regiment ?—Yes.

7930. Are you aware that the five or six represented the body, and that the body rose in arms the instant they knew that such a proposition had been made by the five or six, and immediately claimed some alteration, so as to render themselves eligible to be promoted generally ?—If the artillery medical officers, as a body, had made any such requisition, I think they ought to have suffered for it, and have come in accordingly to the position in which they subsequently stood among staff-surgeons.

7931. Upon a strict investigation, it was found that a very few, those who happened to be at Woolwich at the moment, forwarded that recommendation to the great annoyance of the majority of the body ?—I am not aware of all the circumstances.

7932. (*Sir H. K. Storks.*) Looking at the capricious nature of the rule of promotion according to stations and districts, would it not be fair to take a man's whole length of service, when you can, in cases of promotion and reduction ?—I think, in case of reduction, where the loss of service is so serious in amount, it is hard to punish me or any other man for the sake of another. When another man is out of the way, it is his misfortune, but it is not our fault. In the present instance, there are officers retained on full pay because they are senior to me on service, who were serving

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under me at Balaklava. I, the principal officer, come home, and am reduced, and officers of the same grade who served under me are retained, because they are senior to me.

7933. (*Sir H. K. Storks.*) Therefore you do not gain the advantages from your promotion which you think you are entitled to?—My promotion has been a clear injury to me. I would not have left the 51st regiment if I had known that anything of the kind was to take place.

7934. (*Dr. A. Smith.*) Do you believe that you would have been promoted when you were, if those men now serving under you had been available for promotion?—Officers have been promoted for special service in the Crimea. I had very special service in Burmah; I know that I was favourably reported upon, and I certainly did think that my early promotion at home was in consequence of that service.

7935. (*President.*) Have you any other observation to make upon the subject of reduction?—There were several officers junior to me in rank and service, who have been kept on full-pay serving at home.

7936. (*Dr. Andrew Smith.*) Have you not been given to understand that those officers were merely temporarily retained, and that they are not officers to be permanently kept on the full-pay list?—One was employed at Portsmouth, and one at Aldershot. I found those officers removed, and I came to the conclusion that they were permanently on full-pay.

7937. Had I not told you that they were not?—No, I was not told to the contrary.

7938. Had I not told Mr. Crawford that they were not?—I have not seen him since I have been in town.

7939. Is it not the impression abroad that those men are only temporarily retained?—Mr. Crawford told me that he hoped to be able to tell me. I do not know what impression is abroad.

7940. Did I not mention to you that Dr. Wood had been for a time employed in very important duty at Portsmouth, and that it was very important as he understood the duties of the disembarkation of the sick and the disembarkation of troops, to leave him there, as it would not be a station permanently requiring a medical officer, as staff-surgeon?—I do not remember your saying anything to me as to Dr. Wood, when I saw you in January. Dr. Wood was then at Chatham, he had left Portsmouth; I do not think, when I saw you on returning from the Crimea, I had any conversation with you as to Dr. Wood; you mentioned Dr. Reade specially—that he had been retained in consequence of the Chatham hospital.

7941. Yes, retained for temporary duty, but Dr. Reade at that time was warned for half-pay?—I allude to what you told me in February last.

7942. Are you aware that for some considerable time past Dr. Paynter and Dr. Wood both have been told that they are only serving for a few weeks with the understanding that at the expiration of that time they will be put on half-pay?—I heard so indirectly the other day; but I find they are still in this month's army list.

7943. (*President.*) With regard to relative rank, have you any suggestion to make upon that point?—I think that an assistant-surgeon after seven years' service, if not after five, should have the rank of captain.

7944. Do you think that medical officers should sit on courts-martial or upon mixed boards according to the dates of their commissions?—Yes.

7945. Would you make a medical officer the president of a court-martial?—The position of president has always been considered to involve military command, and I think that is a question which I must leave for the military authorities to decide.

7946. (*Sir H. K. Storks.*) Did you ever know medical officers sit on courts-martial?—Yes.

7947. Where?—I was put on one according to my relative rank, but I felt that it was by courtesy.

7948. What made you think so?—Because I have heard military officers frequently say that we had no claim to it.

7949. Can you show any regulation to the contrary?—There is a letter from the Duke of Wellington, as to the presidency, with reference to an inspector-general in the West Indies, soon after the death of the Duke of York.

7950. Can you refer to any regulation?—It was an order. His Grace puts it on that ground that the presidency involves military command, and in no case is a medical officer eligible to sit as president. I know that there is a case which occurred in Bengal, and at last it was decided by the Commander-in-Chief there.

7951. (*President.*) Assuming that if it is not the practice, it ought to be, that officers should sit according to the dates of their commissions, excepting in the case of the president, are you satisfied with the relative rank of medical officers, with the exception of the case you have mentioned, that of assistant-surgeon, after five or seven years?—No, I think that a regimental surgeon ought to have the rank of field officer after a certain period of service,—certainly after 15 years.

7952. And a deputy-inspector, what should his position be?—I think that he ought to come within the Royal Warrant of 1854; after three years' service he should get whatever a lieutenant-colonel gets.

7953. In the same way, I presume, you are of opinion that Sir John Hall's rank was not sufficient in the Crimea at the head of the medical department of so large a force?—No.

7954. He held the rank of brigadier-general, did he not?—Yes; most of the officers commanding the brigades were major-generals, indeed all of them.

7955. In the new pension warrant which is published in the Army List, I think there is some error in the relative rank of the officers?—There are some ranks omitted, and some are entered that have ceased to exist; and the sum allotted to medical officers is much below that which is allotted to commissariat officers of corresponding rank.

7956. Is not the difference between the pension granted to the commissariat officer and to the medical officer the result of their having been formerly serving under two different departments, the one being under the Treasury, and the other under the Horse Guards?—I do not know; but the commissary-general, who, by the regulations, only ranks as a brigadier-general, is classed with the major-generals, and he gets 50*l.* more. A deputy commissary-general, if at the head of his department, gets 300*l.*; but in the medical department, if I were at the head of my department, although of the same relative rank as a deputy-commissary general under three years service in that rank, I should by that warrant only get 100*l.*

7957. (*Dr. A. Smith.*) Do you know what the pay of the commissary-general is on the field?—His pay is 4*l.* 14*s.* 11*d.*; his war pay is 1*l.* 18*s.* 0*d.*, and his field allowance is 15*s.*; I think 7*l.* 7*s.* 0*d.* altogether.

7958. Do you know the pay of an inspector-general in the field—Sir John Hall?—Yes; I do not think he received 2*l.* a day. There is 1*l.* 18*s.* and 1*l.* 16*s.*, and we must serve one year on each. There was another warrant came out the other day as to lodging-money for chaplains. The chaplain of the forces gets 4*s.* 6*d.* a day lodging-money, and a staff-surgeon of the first class only gets 3*s.*

7959. (*President.*) You are placed in the Army List after the commissariat?—Yes; and they take precedence of us in consequence.

7960. (*Mr. T. Alexander.*) As a medical officer, whatever may be your rank, you only get 1*s.* a day for one servant?—Yes; and a brevet major of the royal engineers gets, I believe, 3*s.*

7961. (*President.*) With regard to the uniform, have you any suggestion to make?—I think that the purveyor's department should have a different uniform, and I know that in the new book of regulations it is so.

7962. As to the commissariat, there is some want of distinction between their forage caps and that of the

medical officers ?—I think that their forage cap is too like ours. I am told by commissariat officers that several of their officers were taken for medical officers at the Alma ; the wounded seemed very doubtful, and we should prevent any impression of that kind.

7963. Have you any observation to make on the subject of funeral honours ?—I think that medical officers should have the same as any other officers.

7964. Have you any opinion as to how the medical staff corps should be formed ?—They should be selected from the ranks of the army, I think.

7965. (*Mr. J. R. Martin.*) Did you ever hear of the case of a medical officer at Gibraltar to whom funeral honours were refused, a surgeon of the name of McGregor ?—Yes, I did ; and I think I have heard that his friends requested permission to bury him privately.

7966. (*Sir H. K. Storks.*) How were they refused ? —The Queen's regulation lays down that they are not entitled to those honours. It excludes them. It says that they are to have some honours without firing over their graves. There is a distinction made between a regimental staff and a medical staff assistant-surgeon. As a regimental staff officer he gets the honours.

7967. Is that usage ?—No. I can show it in the Queen's regulations.

7968. Where do you show that an assistant-surgeon is to be fired over ?—It is laid down in the Queen's regulations.

7969. Do you consider that the honours consist in the firing ?—Yes, I think it is an essential part. I think that an officer who is buried without the firing would be considered as in some degree inferior.

7970. (*President.*) Can you state that the practice has been to withhold those honours from staff medical officers ?—I cannot say that, for I have known cases where the practice has been different. It depended upon the general-commanding entirely. I know that in the case of the deputy inspector-general at Madras the firing party was the same as for a lieutenant-colonel.

7971. (*Mr. J. R. Martin.*) Did you hear in the case of Surgeon McGregor that Dr. Gilchrist, the inspector-general of hospitals there, in making his will, directed that his remains should be interred in the civil burial ground ?—I do not know who the officer was, but I heard that there was such a case.

7972. (*President.*) Do you think that the medical officers should have their servants supplied from the hospital corps ?—Yes, in the field particularly so.

7973. Have you any other suggestion to make on the subject of servants ?—I think that there was no position in which medical officers were more cruelly placed than we were in that respect in Turkey and in the Crimea.

7974. (*Mr. T. Alexander.*) Ought they not to have an allowance for each servant ?—Yes ; on ordinary occasions where a money allowance is given, instead of a number of servants given, a difference ought to be made according to the ranks of the officers. An assistant-surgeon and an inspector-general should not be expected to do with the same number of servants. In my own case I was allowed 3*s.* a day and I paid 6*s.*

7975. Medical officers having a title to so may servants according to their rank, if they do not obtain those servants from the hospital staff corps, ought they not to have a certain amount of pay for each servant to enable them to get them ?—Yes ; clearly.

7976. (*President.*) The amount which is allowed did not procure you a servant ?—No ; we were allowed very liberally for one servant ; but having three or four horses to look after, we could not possibly do with one servant.

7977. (*Mr. T. Alexander.*) Are you aware that at one time the rations were refused in the field for the second servant, though it was known he was kept ?—No ; I think when I joined in the Crimea I paid considerably more for rations for the first servant than for the second, as I received allowance for the first and not for the second.

7978. (*President.*) Have you had any opportunity of seeing how far medical officers are consulted by military officers in command with regard to sanitary questions ?—Yes, I always have been very fortunate in that respect.

7979. From what you know, would it be advisable that the military officer should consult the medical officer, and that the latter should give his opinion in writing ?—I think that the duties and responsibilities of both should be clearly defined. The medical officer sometimes does not know whether his advice will be taken.

7980. (*Sir H. K. Storks.*) Still you have found military officers ask your opinion ?—Yes.

7981. (*President.* You never knew any unwillingness to do so on the part of military officers ?—No.

7982. (*Mr. J. R. Martin.*) There is no regulation to that effect ?—No.

7983. (*Mr. T. Alexander.*) As an invariable rule, would you say that they are consulted ?—No. I have seen many regiments where I believe the surgeons were not so fortunate as I was.

7984. *(President.)* Do you think, generally speaking, that the regimental medical officer is on a proper footing relatively with the lieutenant-colonel commanding the regiment ?—I think so.

7985. Does he report to him, or does he send his reports directly to the principal medical officer ?—The principal medical officer is merely his professional superior. Everything is done between the surgeon and the commanding officer. I know that in my case the commanding officer always said that he wished everything to be direct between us.

7986. Would it be advantageous that the medical reports that are made by the regimental medical officer to the principal medical officer should be made through the colonel ?—Yes, I think that it might avoid the confusion and many inconveniences that arise. A case occurred in the Crimea with regard to some stretchers, in which there was some misunderstanding. The surgeon of a regiment received a strict injunction from the principal medical officer to have his field equipment ready, and everything in good order for a move that might take place at any time ; and acting upon this, when he received a message from the colonel for two stretchers, he did not feel justified in giving them up. At first, I think, a serjeant came, and next the adjutant came, and at last he gave up the stretchers, but he was put in arrest for disobedience of the orders of the colonel.

7987. (*Mr. T. Alexander.*) Are you aware that they were sent for, to be used as a triangle for flogging ?—I do not know.

7988. (*President.* The colonel in that case was not aware of the order given by the principal medical officer to the regimental surgeon ?—Probably not.

7989. With regard to the rank of purveyors and their relationship to the medical officer, have you formed any opinion upon that subject ?—I think that they should be strictly under his orders in everything as to hospital arrangements and supplies.

7990. You would keep up the purveyors' establishment, and not make it a part of the commissariat ?—I think that the purveyors' establishment has this advantage, that they are more immediately under the medical department than the commissariat would be.

7991. Are you aware of the practice in India where it is all done by the commissariat ?—It is nominally, not practically so, at least not in the Presidency of Madras ; the arrangement there is, that the commissary general advertises for conicopolies one for each European regiment. These men lodge security with the commissary-general, and he fixes upon the man whom he considers most efficient and most useful. Having got the securities, he gives over to him the supply for the regiment and the hospital too ; his duties as to the supply of the hospital are, that he is to do everything that the surgeon orders ; he becomes practically the purveyor, and if everything goes right, there is no communication between the commissary-general and the medical officer, but if the latter has

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any reason to complain of the manner in which this man performs his duty, he appeals to the commissary-general who can dismiss him.

7992. You stated that it was important that the purveyor should understand that he was under the authority of the medical officer, is it not so now ?—I do not know that they clearly understand that, and I do not think that they submit very generally to it.

7993. A purveyor cannot report home, and he cannot exercise any discretion ?—He is ordered to provide things, but he can report what he considers to be an excessive expenditure ; but I think he is no judge at all.

7994. You must have some financial check ?—I think that the principal medical officer ought to be responsible for that.

7995. (*Sir H. K. Storks.*) The purveyor only reports to the War Office as to the financial part of his duties ?—Yes, on the expenditure, if it is too great in his opinion, or more than usual ; it need not be excessive.

7996. From your experience of the purveyor's department, have you ever known the purveyor refuse or show an unwillingness to obey the orders of the principal medical officer ?—I have known cases where the purveyor has questioned my authority. A case occurred at Balaklava, where one Sunday, after being at church, I went over into the wards of my hospital, which was the general hospital at Balaklava, and I found that some of the orderlies had been employed in scraping the floors ; I walked over to the office of the purveyor, and I said to him—it was Mr. Fitzgerald, who took great pains, and every one appreciated his exertions—that I did not wish any extra work to be done on Sunday. He said, "I am not under your orders, sir ; I am responsible to Sir John Hall for the state of the hospital." I said, "Will you be good enough to show me your instructions to that effect ?" He said, "You are perfectly well aware that I am deputy purveyor-in-chief." I said, "I am, but I am not aware that as deputy purveyor-in-chief you have anything to do with this hospital ; you must act under my orders." He did not show me any writing, and I desired the hospital servants to take no orders from him.

7997. Was not the rule in the hospital this, that the purveyor was responsible for the exterior and not the interior ?—Yes.

7998. (*President.*) He ought, you think, to be responsible to the principal medical officer ?—Practically he should take his directions from him ; in many cases, as to washing the floors, the purveyor is not able to judge whether the state of the patients will permit it.

7999. (*Mr. J. R. Martin.*) Should not the relations between the surgeon and the purveyor be in all cases thoroughly defined and understood ?—Yes.

8000. (*Dr. A. Smith.*) Were there no special instructions given by Sir John Hall to Mr. Fitzgerald in consequence of its having been found previously that the changes of the medical officers were so frequent, and that they were so occupied in their ordinary treatment of the sick that they really had not time to look to the hospital ; and had not Sir John Hall stated to Mr. Fitzgerald that in consequence of that he placed him in charge to look to the cleanliness of the hospital ?—There was nothing on record to show that, and there was always a medical officer, for many months a first-class staff-surgeon, specially in charge of that hospital.

8001. You are not probably aware that Sir John Hall wrote to me on that very subject, saying that the medical officers were so much occupied that he found it was difficult to compel them to look after the cleanliness of the hospitals ; and as he found Mr. Fitzgerald was an active man, he had placed him in a situation rather different from that of a purveyor, to look after the cleanliness of the hospital?—I think he should have made the medical officer in charge fully aware of it.

8002. (*President.*) Did you ever know a case in which a purveyor made a report against a medical officer to the principal medical officer ?—Yes ; a case also occurred at Balaklava, in which I have reason to believe that a report was made.

8003. You do not know it of your own knowledge ?—Evidence was taken in the purveyor's office and witnessed by the purveyor's clerk ; no doubt it was taken by Mr. Fitzgerald. On this occasion Mr. Jackson had just succeeded to the charge of the hospital. The practice in the general hospital at Balaklava had been to have the beds laid down. Mr. Jackson was a very active and energetic officer. I had not seen the principal medical officer myself. I said, "If you "look under those beds I think you will find a deal of "rubbish, clothes, and boots ; and as the cold weather "is nearly over, you had better have all the beds "folded up, and have all those things put together "and put away in store." It appears that Sir John Hall visited the hospital that day, and these things being about, he seemed vexed to see it so untidy. It appears that he then gave an order—which I was not aware of until afterwards—to Mr. Fitzgerald to assume the charge and the responsibility of the cleanliness of the hospital, and ordered the beds that were not made up to be made up. He mentioned the circumstance to me. I did not clearly understand that he objected to the beds ; I thought he wished that we had mentioned it to him before. I said that that was the usual practice at Castle Hill and in the other regimental hospitals. I knew that those beds were made receptacles for a quantity of rubbish, and I had sanctioned Mr. Jackson having them turned up. However, when Mr. Jackson went to the hospital in the evening, one of the hospital servants told him that the order was to turn them down. I think he told them to suspend the order until he had seen me or Sir John Hall ; and this was considered as disobedience of orders. I know that a report was sent to Sir John Hall, and he wrote down a very angry letter in consequence.

8004. That was a report made by the purveyor ?—Yes.

8005. (*Dr. A. Smith.*) He made his report to Sir John Hall, because he had not been permited to carry out the orders issued by Sir John Hall ?—Neither Mr. Jackson nor I had received information that those orders were given to Mr. Fitzgerald. They were mentioned incidentally by a hospital servant to Mr. Jackson.

8006. (*Sir H. K. Storks.*) Were they not put into the departmental orders ?—No ; it was a mere verbal order.

8007. Had you departmental orders ?—Yes ; it was a verbal order given to Mr. Fitzgerald, who gave it to one of the hospital servants, who gave it to Mr. Jackson, and Mr. Jackson paid no attention to it.

8008. (*President.*) You were speaking of the degree to which the medical officers were employed at Balaklava ; was there much drudgery of an unprofessional character imposed upon the medical officers ?—Yes, a good deal ; at Balaklava there was the constant auditing of the purveyor's accounts. There was a case occurred to me in which I had to examine 1,000 two-dozen cases of wine, which occupied me and two staff surgeons for two or three months.

8009. On what ground was this duty imposed upon you ?—There was some suspicion that this consignment of wine had been tampered with, and that the full quantity was not in the boxes, and I was required to open, unpack, count, repack, and close up every single case of those 1,000 cases.

8010. By whom was that ordered ?—By Sir John Hall.

8011. (*Dr. A. Smith.*) Are you not aware that that is an order of the government that there shall be a board of survey appointed ?—I received a departmental order from Sir John Hall to perform that duty. The usual way is to select a box here and there and examine it, but this was a special case in which I had to examine every box. I know that Dr. Templeton was constantly employed in auditing the purveyor's accounts.

8012. (*President.*) All those being duties of an unprofessional character, which take a doctor away from his patients, and which might be as well executed by a subordinate officer ?—Yes.

8013. Are you aware whether any distinction was made in the distribution of honours between the medical men in the front and those at the general hospitals at Scutari ?—There were none given with the exception of Dr. McGregor and Dr. Cruickshank. He was promoted. There was no special promotion except that.

8014. (*Sir H. K. Storks.*) What decoration did Dr. Cruickshank get ?—None ; but he was promoted.

8015. (*President.*) Men were sent up from Scutari and promoted at the front, were they not ?—There was not much interchange ; I had to apply specially to be allowed to go up.

8016. Were not there men at Scutari who were promoted into vacancies that occurred in the front ?—Dr. Gordon went up and got charge of the second division, in which he continued until the taking of Sebastopol. He was promoted in the front.

8017. No French decorations or any English orders were given to the men engaged at Scutari ?—No.

8018. (*Sir H. K. Storks.*) When did you go to the Crimea ?—In the beginning of October.

8019. You did not get the Crimean medal ?—Yes ; but I had to give it up.

8020. Do you know the case of the officers who volunteered into the French hospitals ?—Yes. I know that they did so, and I know that they were very specially thanked.

8021. They were eligible for the French decoration of the Legion of Honour ?—I should think so.

8022. (*Mr. J. R. Martin.*) With your knowledge of and acquaintance with the officers of your department do you think that it would gratify their feelings and be proper in itself, that their merits should be recorded by the commander-in-chief in his despatches ?—Certainly.

8023. Do you consider that a favourable mention by both Houses of Parliament of the services of the medical department after a war would be gratifying to the feelings of the service ?—I do. I think it would be just also.

8024. Have you considered the question of such a roster of duties as should elicit the various capabilities of medical officers, and as should show who might be best employed as surgeons, physicians, and administrative officers ?—You can scarcely judge while a man is a regimental surgeon ; he may show talent in a special way. Many men are excellent regimental commanding officers who might not make good generals ; no one can tell what the general administrative talent may be until a man is tried.

8025. Are you aware that in the military states of Europe such an arrangement of duty is in existence among them as shall elicit their peculiar capabilities ?—I do not think we can follow that out in our scattered regimental service.

8026. No measures have occurred to you which should better elicit the individual qualities of medical officers than that which now exists ?—No ; I think that the present system elicits all that we can in our service reasonably expect.

8027. But the regimental school merely elicits practical medicine and surgery ? — In a limited way it elicits administrative talent too. An officer who is moving with his regiment on service may show that he is able to keep up his equipment. In India each regiment moved separately ; and while we were on service in the last Burmese war, a good deal depended upon the regimental surgeon and his assistant.

8028. (*Mr. T. Alexander.*) Do you think that if a certain number of honorary physicians and honorary surgeons to Her Majesty were selected from the most meritorious officers in the medical service, it would be considered a boon ?—Yes, it would be very gratifying.

8029. (*Sir H. K. Storks.*) How would you select them ?—In the same way that I would confer any other reward.

8030. By seniority or selection ?—No ; that is a mere honorary appointment, and it does no injustice to anybody else.

8031. Do you think that a full-pay retirement to a certain number of old officers would be considered a boon ?—Yes, I think it would.

8032. (*Mr. J. R. Martin.*) In such a case as that, would it not be fair to say to a deserving regimental officer, you have got your reward ; you are not eligible for the administrative department, and you must be passed over ?—Yes ; I think it would be showing a fair consideration to a deserving officer who was a good practical surgeon.

8033. (*Sir H. K. Storks.*) Would not a full-pay retirement relieve the list from many old officers who are unfit for active duties ?—If they give the full-pay that the officer actually receives. In our regulations the standard is the minimum ; we do not recognise the extra pay as pay, it is only as a gratuity. A deputy-inspector's pay is 1*l.* 4*s.*, and with the additional pay it comes to 1*l.* 10*s.*

8034. (*Mr. J. R. Martin.*) Would it gratify the feelings of old and deserving officers if on their retirement they were to obtain a step in brevet rank ?—I think so ; an honour any step in brevet.

8035. (*Dr. A. Smith.*) Are you not aware that that regulation has been established ?—I have seen it lately.

8036. (*Mr. T. Alexander.*) Are you not of opinion that forage ought to be allowed to surgeons without deductions ?—Certainly ; I never could understand why a surgeon should be required to pay for forage.

8037. If full-pay retirement were given to a certain number of old officers, would you give it merely to the executive or also to the administrative branch ?—I would give it to the executive who were really deserving officers, and who had been unfortunate—men who had not got promotion but against whom no one could say anything. I contemplate that some officers might be passed over because they were not eligible.

The witness withdrew.

Adjourned to Friday next at One o'clock.

Friday, 10th July 1857.

PRESENT:

The Right Hon. Sidney Herbert, M.P.
A. S. Stafford, Esq., M.P.
Sir H. K. Storks, K.C.B.
Dr. Andrew Smith.
T. Alexander, Esq., C.B.

Sir Thomas Phillips.
Sir James Clark, Bart.
J. R. Martin, Esq., F.R.S.
Dr. John Sutherland.

President, The Right Honourable SIDNEY HERBERT, M.P.

John Robert Taylor, Esq. C.B.

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John Robert Taylor, Esq., examined.

8038. (*President.*) Have you considered the rates of pay which are now allotted to each rank in the medical service?—Yes, I have.

8039. Do you think that they are sufficient?—I think not.

8040. In what ranks do you think that the pay is not sufficient?—In all ranks. I have a paper in which I, in common with some others, have put down what we conceived was required as to pay, and if the Commissioners please, I will hand it in as an answer to that question and also as to the half-pay.

8041. Have you made any calculation of the increase of expense that would result upon the existing establishment by the alteration in the rates which you propose?—No, I do not feel that I have the means to make such a calculation as that; in regard to the table of half-pay, the quinquennial period might, with advantage, be carried out.

8042. Instead of the decennial period?—There is no such division of the period from ten to twenty years, otherwise it is a quinquennial period.

8043. But as in the existing rates, there are periods of ten, or periods of five years?—I think it varies.

8044. Do you propose to make it five years in all cases?—Yes.

8045. And the increase of pay in the same manner?—No, it is not exactly in that way. I cannot say that there is any definite rule with regard to this, but we merely consider, taking each rank, what should be the pay of that rank.

8046. Do you not think that it would be an advantage, supposing it were so adjusted, that there should be no difference in the point of expense, and that the rises in pay should take place at shorter intervals than at intervals of ten years?—I think so. As it at present stands, the first increase of pay for an assistant surgeon is after ten years service, when he receives an additional 2*s.* 6*d.*, making his pay 10*s.*; but if he has become surgeon his pay is 13*s.* or 15*s.*, if he has already served two years on 13*s.* There is no further increase of pay in this rank till after 20 years service. Practically there are no regular intervals for increase of pay.

8047. Where there is the difference of pay between the ranks, that cannot be helped?—At present it is impossible to say how the pay runs. As I said before, I got promotion without any increase of pay.

8048. You do not get an increase of pay now the first year that you serve?—Not for the first two years. I came home from India as the surgeon of the regiment, and I was promoted on my way home. I saw the Gazette, but when I came home I got no increase of pay as staff-surgeon of the first class. I got exactly the same as when I was regimental surgeon. During the whole time that I was staff-surgeon of the first class I had no increase of pay. Then when I was promoted to the rank of deputy-inspector I was serving on the pay of a deputy-inspector under 20 years' service, when I was actually over 20 years' service. I served three years over 20 at the pay of my rank under 20 years.

8049. Does not the variation of pay in the rank of deputy-inspector depend upon the length of service in the rank, or upon length of service from the date of first entry?—The date of the first entry as well as in the rank. When I came home I wrote to Sir John Kirkland—I did not think that he was right in giving me the same pay after promotion, and he explained the regulation,—the regulation was that you must complete two years on the minimum rate of pay in that rank if you have not had two years of that pay in your former rank. The evil and the injustice of that is marked in this way: When I was promoted to staff-surgeon of the first class there were two officers in the same Gazette, one senior and one junior; the junior surgeon being on 15*s.* a day, and being promoted to staff-surgeon of the first class, he, with the promotion, got an increase of pay of 4*s.* per day, whilst I, with nearly two years longer service, got no increase.

8050. Promoted to the same rank?—Yes; and the promotion gave him an increase of pay of 4*s.* a day.

8051. Why?—Because he was a regimental surgeon on 15*s.* a day, whilst I being a regimental surgeon from length of service on the 19*s.*, promotion gave me nothing.

8052. On the other hand, you had been better off before than he, you had come to the same rate of pay, but it was a greater rise to him than to you?—Yes; but that favoured the junior; whereas the man who has been unfortunate in his promotion, does not get an increase till late, while another gets an increase of pay very early.

8053. You had the advantage of him in the previous rank?—I had been longer in the service and I was entitled to it.

8054. (*Sir T. Phillips.*) It is not the grade that gives an increase of pay, but it is the length of service?—It is both.

8055. (*President.*) The amount of pay depends upon the rank, but the increases of pay within the rank depend upon the length of service?—The amount of pay does not depend upon the rank altogether. I was serving in the Crimea with a staff-surgeon of the first class in a rank junior to me getting the same pay as I did, 24*s.* a day.

8056. He was junior to you?—No; he was many years senior in the service, but junior in rank, and getting the same pay. It told in one way, and not in another; here was a staff surgeon serving with me—he was senior in the service, and perhaps on that ground it was fair that he should have an equal rate of pay, though I was senior in rank. We each got 24*s.* But then I turn round and see a junior man in the service of the same rank getting the same pay.

8057. With regard to half-pay, is the amount that you propose governed by any relative proportion to the full-pay in the different ranks?—No; it is not.

8058. What is the principle upon which you propose that?—There is no regular principle—it is arbitrary, but it is arranged so that a man shall

have an increase according to service, and according to rank.

8059. Does the seniority of service interfere with the seniority within the ranks as regards half-pay as well as full-pay, and is the half-pay adjusted upon a mixture of both principles?—I am not sure.

8060. If the whole cost of the changes which you propose appear to be a very large annual increase of charge, do you attach as much importance to the increase of half-pay as you do to that of full-pay?—It depends upon the rule of being put upon half-pay very much. I think it hard for a man on reduction to be reduced to the present half-pay

8061. Reduction only occurs at the termination of a war, and it is, therefore, an event of very rare occurrence. When did you enter the service?—In the year 1833.

8062. You have seen but one case of reduction?—No; now and then a man is put on half-pay on account of sickness, it would be a hard case then.

8063. If only a certain sum can be awarded in augmentation of the emoluments generally of the army medical department, would you not sooner take the whole of it for a full-pay than meddle with the half-pay at all?—Yes, if coupled with a compulsory retirement.

8064. Supposing you can have but a half loaf, which half would you have, the full-pay or half-pay?—I would improve the full-pay on the above specified condition.

8065. Have you any other observation to make on the subject of pay?—I think that where a man in a particular rank falls into the charge of a superior, he should get something for that charge. For instance, when I was staff-surgeon of the first-class at Chatham, on 19*s.*, I was doing the same duty a great part of the time as I do now, but I got nothing extra for it.

8066. You were acting deputy-inspector?—I was doing the duty of that rank.

8067. (*Sir H. K. Storks.*) Were you the principal medical officer?—Yes, and I had all the trouble of the reception of the first wounded. I was there for three months or more as principal medical officer, but I got not one shilling as such. Any military officer, a colonel of a regiment who is made a brigadier gets something very considerable extra.

8068. Would you extend that to all first-class staff surgeons on the different stations where they perform inspectorial duties?—I would give every man a charge allowance.

8069. But there is a charge allowance for performing inspectorial duties on foreign stations?—Yes; that does not apply to Chatham, which is the most onerous station. My predecessor had an allowance of 10*s.* a day. I do not know why it was not given to me.

8070. There is a note at the bottom of page 46 of the "War Office Regulations":—"In addition to the "pay of their ranks, the officers at the head of the "medical department on foreign stations shall receive "allowances at the under-mentioned rates, when "serving under the following circumstances, viz.;—"If with an army in the field of 10,000 men, or "upwards, 20*s.* per day. If with an army in the "field of 5,000 men or upwards, 15*s.* per day. If "with an army in the field of any less number, 10*s.* "per day. If serving in a colony where the forces "consist of 1,500 men or upwards, 5*s.* a day?"—Yes; but that does not apply to Chatham.

8071. (*President.*) What excess of pay does your scale give over the existing pay in the different ranks?—It would vary in the different ranks.

8072. What increase do you give to an assistant-surgeon?—We make his pay from 7*s.* 6*d.* to 10*s.* on first entry.

8073. (*Sir T. Phillips.*) Has he any rise at five years?—Yes; by the scale proposed he would receive 11*s.* 6*d.* at the end of five years, and 13*s.* at the end of ten years. At present the first pay of a surgeon is 13*s.*, it is proposed to make it 17*s.* 6*d.*, with an increase every three years up to 24*s.*

8074. (*President.*) Instead of what?—I cannot say what it is instead of; it would depend upon length of service and other circumstances.

8075. (*Sir H. K. Storks.*) What does he get under similar circumstances according to the existing warrant?—He must commence and serve two years on 13*s.*, he then gets 15*s.* if over ten years total service. There is then no increase till after twenty years total service, when, if he has served two years on the 15*s.* he gets 19*s.* Then after twenty-five years' total service he receives 22*s.*, provided he has completed two years on the 19*s.* There is no further increase in this rank.

8076. (*President.*) Do you propose to do away with everything but length of service in the rank in adjusting the increases of pay?—I propose that the increase of pay shall follow the order laid down in these tables; it is a gradual rise of pay with rank; the rates do not run into one another as they do at present.

8077. Do you intend that increase of pay to be after so many years service within the rank?—Yes.

8078. (*Sir T. Phillips.*) Do you say that you propose an advance in the pay of a surgeon at the end of three years?—Yes.

8079. Why do you depart from the quinquennial period for advancing the pay in the case of the surgeon?—The surgeon has the greater increase; it is the more important office.

8080. Why select three years there?—There has been no system adopted; it has been an arbitrary increase; it seemed to satisfy most parties.

8081. (*President.*) In the pay of the first class staff surgeon, what difference do you make?—The first-class staff surgeon commences on 25*s.*; he may have commenced at present on 19*s.*, and there is a difference of 6*s.*

8082. (*Sir T. Phillips.*) You say there is no principle in the selection of the scale of three years in one instance and five in the other?—No regular system.

8083. (*President.*) Do you give a similar increase to the deputy inspector?—He commences according to this on 32*s.*, or 2*s.* more than a staff surgeon of the first class. When he is promoted he gets an increase of 3*s.* at three years, and 2*s.* 6*d.* at the end of six years.

8084. What does he get now?—That depends upon his previous service. I am getting 28*s.*

8085. Have you any other observation to make on the pay?—No; this table contains my ideas as to pay.

8086. Have you likewise put on that paper your ideas as to half-pay?—The only alteration in the paper that strikes me as necessary is applying the quinquennial period throughout the scale of half-pay.

8087. As to retirement have you included in that scale retirement?—Yes, on reduction and on retirement; the half-pay table contains two lines in one page, one for retirement and one for reduction.

8088. Which is the highest?—The reduction.

8089. Do you propose any compulsory retirement?—Yes.

8090. In what rank?—We propose a compulsory retirement at 35 years service irrespective of rank.

8091. At rates varying in each rank?—Rates varying with the rank according to the scale.

8092. Have you optional retirement besides?—Yes, at 20 years and 25 years and 30 years; there is no increase of retirement after 30 years; it is compulsory at 35. That is what is proposed in this paper.

8093. Do you make the retirements which are not compulsory optional with the officer, or only permissive?—Optional.

8094. An absolute right in all those cases?—Yes, to retire at those different intervals.

8095. At present retirements are not optional?—So far retirements are not optional, that they require the recommendation of the director-general.

8096. And the assent of the director-general?—The recommendation of the director-general.

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8097. With regard to the first-class staff surgeon, do you hold that that should be an executive or an administrative rank?—An executive rank; it will in some cases be administrative, but as a general rule I hold that it is an executive rank.

8098. If only to be an executive rank, what is the advantage of having the rank at all, since the duties would become the same as those performed by a regimental surgeon, and a second-class staff surgeon?—The duties are different. At Chatham there are two first-class staff surgeons, and each has charge of a division.

8099. Are they executive?—Yes, and in some measure administrative; they have a charge, and they have a special duty as to invaliding.

8100. They are sub-inspectors to you?—Yes, they are.

8101. They have professional charge of the wards, have they not?—Yes; and they are responsible for the due treatment of all the cases in their division.

8102. Have they practically the treatment of patients?—Yes; they have, and they perform operations. If you placed their duties in the hands of surgeons, there are a great many more of the rank of surgeon at Chatham, than of the rank of staff surgeon of the first class—and those charges would be perpetually changing with the changes of the surgeons, and cause a great deal of inconvenience. The charge would fall always to the hands of the senior surgeon in his rank, in which the changes at Chatham are very much more numerous than in the first class. I look upon first-class staff surgeons sent to Chatham, as fixed there for two or three years.

8103. There being fewer stations at which a first-class staff surgeon can be appointed, his roster of service comes round less frequently?—Yes.

8104. (*Mr. J. R. Martin.*) Are his services attended with the same conveniences at other stations?—I can hardly speak for other stations.

8105. (*Sir T. Phillips.*) What is the advantage of maintaining so many grades in the Army Medical Department as contrasted with the navy, where you have only the assistant surgeon and the surgeon?—I think a true series of gradations is very essential to discipline and the systematic working of the department.

8106. What is the advantage of having more than two grades, that of surgeon and assistant-surgeon, for executive duty?—I explained that at Chatham if you had not staff surgeons of the first-class in charge of the divisions, or a rank senior to that of regimental surgeon, the shifting of the charge would be so frequent as to cause great inconvenience.

8107. That is because the staff surgeon performs there certain administrative duties?—He has certain special duties not exactly administrative.

8108. What are they if not administrative?—He examines men particularly with reference to their fitness or unfitness for service; he has them under observation in his division, he forms an opinion upon them, and writes it in a book. When a man comes before me my decision is final. I refer to the staff surgeon's account of him while under his observation.

8109. Is there any other reason than that at Chatham?—There is a large number of young men entering the service, and he has to teach them their duties.

8110. Leaving Chatham as a special case, is there in the general administration of the Medical Department in the army any advantage in having more than two grades, namely, the surgeon and the assistant-surgeon?—As regards the medical treatment of cases I do not think so; but as to the system of working a hospital I rather think there is.

8111. In what way does the division into the existing grades enable you to conduct the business of your profession better in the field or at home?—Take a very large hospital with 500 or 600 men, and place a deputy-inspector at the head of it, you must subdivide it, before the deputy-inspector can have any system of inspection at all. Then I say, if you give a division to the senior surgeon, you must either give him double duties, or relieve him from one duty to do the other; in that way you make the first class staff surgeon.

8112. Why in military life does it seem to you necessary to have for the treatment of disease those different grades?—It is not for the treatment of disease, it is for the military duties of the hospital. He has at Chatham professional duties. He is held responsible for the treatment of all cases that he has under him.

8113. (*Mr. J. R. Martin.*) He performs medical duties administrative and executive at Chatham?—Yes.

8114. (*Dr. A. Smith.*) Have you any staff surgeons of the first class as executive officers anywhere else but at Chatham?—I am not aware how you employ them.

8115. (*President.*) What duties did they perform at Scutari?—I was not there; I cannot say. I fancy that staff surgeons of the first class performed operations in their divisions.

8116. (*Mr. J. R. Martin.*) Besides the duties of inspection?—I did not think that their duties were inspectorial.

8117. (*Dr. A. Smith.*) Are you not aware that every staff surgeon of the first class at the present moment, save the two at Chatham, are performing administrative duties?—No, I am not aware of that.

8118. Is not it your belief from what you know of the service?—I should not call it their duties in any recruiting district, for instance.

8119. In all stations where a staff surgeon of the first class is placed, except at Chatham, do you believe that they are doing executive duties?—I do not know where they are employed. I thought that they were principally on recruiting districts.

8120. (*Sir T. Phillips.*) Supposing the staff surgeon of the first class to be really and ordinarily limited to administrative duties, would not it be better that some other distinction should be given to him than the name of staff-surgeon?—I disapprove of the present names and styles of our ranks.

8121. (*Mr. J. R. Martin.*) You would call him a deputy inspector?—I would call the staff surgeon of the first class a brigade surgeon. I look upon that as the extent of his charge.

8122. (*Sir T. Phillips.*) What you want to show is that his duties are not so much those of a surgeon as of an administrator in the medical service?—I think he is a sort of consulting surgeon in his division; there is one below him. We look to him at Chatham to regulate the diet rolls, and not to allow the old soldiers to persuade the young officers to give them anything they may fancy.

8123. What is the advantage of having regimental surgeons and staff surgeons of the second class rather than calling them surgeons?—I do not know.

8124. Why not call them surgeons and appoint them either to regiments or appoint them to the staff service as may be needed either for the one or the other?—A man is a regimental surgeon or a staff surgeon.

8125. Is there any distinction except in the words used between a regimental surgeon and staff surgeon of the second class?—No, they are exactly the same in every respect.

8126. (*Sir H. K. Storks.*) In fact, the second-class staff surgeons are supernumeraries on the station, and available for any duty that they are required for?—I should imagine that they have the staff duties of the station.

8127. Suppose a regimental surgeon is sick, you would put a staff surgeon of the second class in charge of the regiment, would you not?—You may.

8128. (*President.*) If the rank of first-class staff surgeon was done away with, you would require a

larger number of deputy-inspectors to be appointed throughout the different stations ?—I should say so.

8129. At present, do you understand that it is a mixed grade, partly executive and partly administrative ?—Yes.

8130. That is the advantage you see in its retention ?—I think it is a sort of transition grade—he is available either way.

8131. If it could be shown that they are purely inspectorial, you would not attach the same importance to the rank ?—No.

8132. In the naval service there are four ranks, are there not ?—I am not aware.

8133. In the Indian service there are four ranks, are there not ?—Yes.

8134. In our service we have director-general, inspector-general, deputy-inspector-general, first-class staff surgeon, surgeon, and assistant-surgeon ; six ranks ?—Yes.

8135. (*Sir T. Phillips.*) In civil life, take the civil hospitals, we only know of three grades, which unite the consulting officer, the surgeon or the physician, as the case may be, and the assistant-surgeon or assistant-physician ?—I think it is entirely a matter of military economy. If you do away with staff-surgeons of the first class there are many stations where you would not employ a deputy-inspector. You would take the senior surgeon, and the surgeon of one regiment interfering with the duties of another is disagreeable, yet it would be necessary.

8136. (*Mr. J. R. Martin.*) Would there not be a disadvantage in so many of the inspector's class being relieved from executive duties ?—I think that the staff surgeon of the first class should be employed as an executive principally.

8137. Would it not be an advantage to have a deputy-inspector occasionally employed in the treatment of the sick ?—I think it would.

8138. (*President.*) There is very great difficulty in making promotions from one rank to another in a way that satisfies the officer of the department ?—Very great difficulty.

8139. Is not every increase in the numbers of the ranks an augmentation, by the more frequent recurrence, of that difficulty ?—Yes ; on the other hand, a man remaining on the same rank long gets discontented.

8140. But he does not get discontented with an equal prospect of promotion to rank and pay ?—He gets discontented at remaining very long in the same rank ; he finds men in other departments stepping over his head, and occupying higher positions, which is unpleasant. If a man remains long as the surgeon of his regiment he will find a boy ensign become his commanding officer.

8141. If you made this regulation, that after 12 years' service, a regimental surgeon should have a small increase of pay, with the title of surgeon-major would that meet the difficulty ?—I do not think it would.

8142. Not so far as the inspectorial duties were concerned, but it would as far as the executive duties were concerned ?—I do not think it would. A man would still be a regimental officer.

8143. Admitting that it would operate prejudicially so far as inspectorial duties are concerned, so far as the executive duties are concerned it would make no difference, would it ?—No ; not as regards the regiment; as surgeon-major he would do the same professional duties.

8144. Is there not this disadvantage at present in the maintenance of the rank of first-class staff surgeon, that the director-general in selecting for deputy-inspectors has a very limited field to select from, not above 40, whereas if he selects from the whole rank of regimental second-class surgeons he has a wider field from which to choose?—Yes, I do not deny that, but it would alter the whole principle of promotion.

8145. Why so ; the principle of promotion is to promote from the rank of surgeon to first-class staff surgeon by selection ; and again from first-class staff surgeon to the rank of deputy-inspector and inspector the principle would remain the same?—It would enlarge the field of selection.

8146. How would it alter the principle ?—It would make such an extensive alteration that I can hardly see the bearing of it.

8147. (*Mr. J. R. Martin.*) Would it not be an advantage to enlarge the field of selection ?—I am not sure.

8148. (*Sir T. Phillips.*) Those from whom the selection was to be made would think so ?—I think it would open the door to increased discontent.

8149. (*President.*) Are not the first-class staff surgeons now taken by selection ?—I am not aware how they are taken. I can detect no system. That is a cause of discontent, that no man can detect any regulated system.

8150. Is it not professedly by selection ?—I am not aware. I cannot answer that question.

8151. From the next rank from the first-class staff surgeon to that of deputy-inspector, is not that by selection ?—I cannot say whether it is or is not.

8152. (*Sir H. K. Storks.*) If it is not by seniority it must be by selection ?—No, that does not follow. I can find other reasons. Dr. Smith may say,—Here is a man, he is at hand, I want a deputy-inspector, therefore I take him. You may say, that you select a man on account of seniority, but that is not selection. What I understand by selection is superior merit.

8153. (*President.*) Making this distinction that selection is selection for merit, or for the convenience of the service, irrespective of seniority, then should you not say that in the two inspectorial ranks, promotion goes by selection ?—I do not understand selection for the convenience of the service ; I would limit selection to merit.

8154. You may have circumstances in which it is necessary to send officers with superior rank, say to the Crimea, immediately, and you would take a man under your hand, rather than wait for another ?—I should say that he was promoted as a matter of convenience, there is no selection. You take him because he is at hand.

8155. (*Sir T. Phillips.*) But there may be ten men at hand ?—Yes ; then it is a mixed case.

8156. (*Mr J. R. Martin.*) Does the doubt on your mind as to the ground of promotion arise from the absence of the publication of the rules of the service? —Partly that, and partly because I have never been able to detect any system.

8157. (*President.*) There is no promotion warrant, is there, for the army medical service, as there is for the combatant officers ?—I am not aware of any.

8158. (*Sir T. Phillips.*) Would it be satisfactory if the reasons were made public, upon which any appointment other than that by seniority is made ?—I think any defined system would satisfy the medical officers, so that a man could see his way in the service.

8159. Supposing a departure from the rule, if a record of the grounds of that departure were made at the time, would that be an advantage ?—I think it would satisfy us.

8160. (*Dr. A. Smith.*) You complained just now that there was no rule that enabled any one to judge how promotion was carried on. I think that you were principal medical officer at Chatham when the last general promotion took place in reference to the inspector-general, two or three of whom, who had served the period of three years, were necessarily to be placed on half-pay ; there was a paper on that occasion sent up from Chatham to a gentleman in my office who brought it to me as an amusing thing, to show that the arrangements in reference to what the promotions would be were all laid down by the medical department at Chatham. That paper was shown to me. I had not given the subject the slightest consideration at that time, and I did go into it, still there was only one error in the statement that came from Chatham. The promotions took place according to the statement that came from Chatham without my having had any

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reference to that, yet there must have been some good rule to enable the officers there to point out the succession in nine promotions ?—I am not acquainted with that. I have been trying lately to discover what are the various circumstances that govern promotion. I have made a memorandum here of what are the different circumstances affecting promotion. I collect from Dr. Smith's evidence before Mr. Stafford's committee that the various circumstances are, seniority in the service, seniority in the rank, next seniority on the station. Then there is a circumstance affecting promotion, namely, taking a cavalry regiment, that is a bar. Then there is merit and there is selection. Then there is the regulated period of service in one rank before promotion to the higher. Then there was a rule adopted by Dr. Smith as to promotions in the Crimea which is given in Appendix 4, page 320 of the Report of Mr. Stafford's committee. Then Dr. Smith also promoted because men were at hand ; sickness is a circumstance obstructing promotion. Then there were promotions with which he had nothing to do ; then there are various combinations of those circumstances ; and with all those circumstances it is impossible for a man to trace any regulated system among so many reasons for promoting.

8161. (*Mr. J. R. Martin.*) They are well calculated to conceal the reason for promotion ?—I think that a man may be promoted and a reason be found afterwards.

8162. (*Dr. A. Smith.*) Will you state the reason why you were promoted, as a junior assistant, over the heads of a great number of seniors ?—I was promoted as a matter of interest. Lord Hill did it to oblige Mr. Guthrie. I forgot to include interest in my detail of circumstances affecting promotion.

8163. Was it done in opposition to the head of a department ?—I am not aware. Sir James Macgrigor must have sanctioned it.

8164. (*President.*) That does not follow ?—I understood it was so.

8165. You find all these various elements in the promotion of the medical department referred to in the evidence of Dr. Smith ?—Yes, I find all of them there.

8166. Then there is promotion by stations, the stations consisting of groups of stations formed for the purpose of promotion by the director-general, but they are not promulgated, and therefore, officers of the department however fairly promoted according to those rules, are not aware of the rules which have governed the selection or promotion ?—Precisely.

8167. Therefore, if the rules were simplified and published, and every man knew the exact reasons for the promotions that took place, though the regulations might press hard upon individuals, there would be greater satisfaction than now ?—Quite so.

8168. In the particular case of districts of promotion, they are generally aware of the fact of there being districts of promotion, and the limits of the districts ?—I do not think that they are aware of the limits. I could not define them myself.

8169. (*Sir H. K. Storks.*) Are there no written regulations on the subject ?—None that I know of.

8170. (*President.*) You do not think that men are promoted except according to those regulations, which, though they exist, are not promulgated, for instance, in a district the senior within it is the person who gets the promotion on a death vacancy ?—There is great discontent on the subject, that is all I can say.

8171. There is discontent on the subject. Is not that founded on their not being aware of the extent of those districts, or of the rules applying to them ? —Yes.

8172. (*Mr J. R. Martin.*) Have you any reason to suppose generally, that the discontent of which you speak is well grounded ? — Yes ; I have reason to suppose so. There was a principle of promotion which I find Dr. Smith notices in his examination, and which I should like to refer to. There are three places in this book where he lays particular stress on the fact that if a medical officer was especially recommended by the head of his department, and by the general commanding-in-chief of the army, that that promotion was carried out as a matter of course. I have good reason to believe, for I was told so by Sir John Hall, that my promotion was so specially recommended ; but it did not take place. When I returned home, I asked Dr. Smith the reason why it had not taken place, and Dr. Smith first told me, that the special recommendation had never reached his office. I believe it did. I think that Dr. Smith found it afterwards.

8173. (*Dr. A. Smith.*) If that recommendation never reached me, do you consider that I did you any act of injustice ?—I was in the office when you rang the bell, and asked if it ever did reach you, and a man brought it to you.

8174. You were not recommended for promotion, but with a great number of other officers as deserving of consideration ?—Sir John Hall told me that he recommended me for promotion.

8175. (*Sir H. K. Storks.*) Promotion to what grade ?—Promotion to the higher grade of inspector-general. The local rank of inspector-general was what I understood I was to get.

8176. (*Dr. A. Smith.*) Are you aware that I made an effort at the termination of the war to get three officers of each grade advanced a grade as a reward for service generally in the medical department of the army in the Crimea, but I was refused it ; and that it was given only to one of each grade ?—I was not aware before of that. You told me that you would ask for two promotions and that promotions had been made without your mentioning the names.

8177. (*President.*) As you understand the theory of foreign service, does it go by roster ?—I am not aware of any roster.

8178. As Dr. Smith states, you were recommended for consideration ; favourable consideration meant a good station or any advantage of any kind, that would be incompatible with the existence of a roster by which each officer should go to foreign stations in his turn ?—I understood Sir John Hall to say that I was recommended for promotion, not for anything else.

8179. You were speaking of a case before this in which a surgeon had been appointed over the head of a senior assistant-surgeon coming from another station : what case was that ?—Mr. Murphy's case.

8180. What was that case ?—Mr. Murphy was assistant-surgeon in the 80th regiment, in which I served as surgeon in Burmah. Mr. Murphy accompanied Sir John Cheape on an expedition to Donabew, where there was an immense deal of sickness, and some smart fighting. Sir John was highly gratified by the way in which Mr. Murphy performed his duties, and he mentioned him in his despatch. Mr. Murphy was recommended afterwards for promotion, and, I believe, the reply from Dr. Smith was, that he was quite aware of Mr. Murphy's merits, and that when his promotion could take place without injustice to officers who were senior to him it would. I think nothing more transpired till Mr. Murphy was coming home, when he found that a junior assistant staff surgeon was promoted over his head, in his own regiment.

8181. Into his own regiment ?—Yes.

8182. Was he on the same station ?—I should imagine so ; he was on the same station as his regiment. I have Mr. Murphy's complaint in his own words:—"Since I wrote to you last I had a reply from "Dr. Smith to my application to have my commis- "sion antedated, he says he regrets that it is out of "his power to comply with my request. The pro- "motions on the 24th February and 3rd March, were "consequent on the outbreak of the war with Russia, "and, as you were, until your arrival in this country,

"considered on the Indian establishment, and eligible "for promotion in that command, you had no claim "to advancement at home on the score of seniority "until you landed.' I have sent him a reply to this, "and stated that the promotion of which I complained, "and by which I considered myself slighted, was that of "one officer, six months my junior, who was put over "me in the regiment in which I was serving, this being, "as far as I knew, a singular instance of such a promo- "tion, namely,—an assistant-surgeon, junior to one of "the assistants of the regiment, being promoted to the "surgeoncy of that regiment in which the senior was "serving. Further, the 80th regiment being on its re- "turn from India was not likely to be sent immediately "to the seat of war, and therefore the outbreak of war "could not have necessitated such a step. If I was "considered on the Indian establishment I should sup- "pose that the regiment which I was serving in and "accompanying would also be in the same roster, and "when a vacancy occurred in it, that if not given to "the senior assistant-surgeon in India, I was entitled to "it, being senior to all the assistant-surgeons at home. "I also added that the promotion of assistant-surgeon "Irwin into the 80th regiment caused much surprise "at the time and inferences unfavourable to me were "made from it, which I submit is a hardship indepen- "dently of the loss of time and of having so many "juniors passed over my head."

8183. (*President.*) That being a rank in which the rule is that promotion goes by seniority on the station? —Yes, that is one rule. There are several rules.

8184. (*Sir T. Phillips.*) By the Indian establishment is the Indian station meant there?—Yes, it means the Indian command.

8185. So that it forms a station for the purposes of medical promotion?—I think it is all on the other side of the Cape. Mr. Murphy felt it very bitterly and does to this day feel it very bitterly. He had been specially recommended.

8186. (*President.*) I understand that your view is that in the ranks in which promotion goes by seniority it should be seniority in the army list without any reference to any other circumstances except unfitness? —Yes, strict seniority in the service.

8187. (*Sir H. K. Storks.*) In promotion generally seniority in rank or seniority in service?— Strict seniority would imply both.

8188. (*President.*) In the first rank from assistant-surgeon to surgeon you would have it by seniority in the service?—Yes.

8189. Then they would stand in the rank of surgeon; seniority in the rank and seniority in the service would be identical in the surgeons' rank?— Yes.

8190. When you pass from surgeon to first-class staff surgeon, or supposing that rank did not exist to deputy-inspector, how then?—I would carry seniority through all the ranks.

8191. To what would you trust to render the rank sufficiently youthful for the discharge of their duties in the upper classes?—I think that compulsory retirement would have that effect.

8192. It would have that effect if you could carry it to such an extent as to reduce the number in the upper ranks, but that would lead to such an increase of expense as the Chancellor of the Exchequer never would allow?—I would not do away with selection altogether; but selection should never lead to promotion in the department, not regimental promotion.

8193. Would this meet your view that there should be strict seniority up to the rank of surgeon in all the executive ranks, but that the promotion to inspectorial rank should be by selection, with reasons assigned, as in the case of a colonel made out of his turn a major-general?—I do not think that many could complain of that system. I do not know how it would work.

8194. You would like to do away with all the intricacy of the double way of reckoning seniority by rank, and by service; and do away with all the separate stations within which seniority alone should count?—Yes. I am an advocate for seniority; not that I think it an unobjectionable rule, but it is the least objectionable.

8195. If you had strict seniority, how would you reward distinguished merit?—By various methods, such as local rank, with the pay of that rank, or good conduct pay.

8196. That would only be a temporary advantage? —You may transfer a man to a good conduct pension, as is granted in the military department.

8197. As to local rank, is it not found that in the combatant ranks of the army, local rank is given for the convenience of the service, and not as a reward to the individual?—I think it is given very often as a reward.

8198. You employ a colonel in the rank of major-general, as he is the man for the objects of the service that you want to employ?—But the major-general commanding my division had local rank given him, and he still remained in command of that division.

8199. (*Sir H. K. Storks.*) But it was only temporary?—But he drew double pay and allowances during the whole time he was there.

8200. (*Mr. J. R. Martin.*) How do you think that an absolute rule of seniority will answer for the advancement of medical science, and for the good of the soldier?—I do not say that the seniority rule is unobjectionable.

8201. (*President.*) It is unobjectionable to individuals, but not unobjectionable with regard to the service if you get by seniority some of the least efficient men at the top of the promotion? A man may be a good surgeon, because he understands the treatment of disease, but will that make him a good deputy-inspector; are those the grounds on which you would choose him?—I think the duties of administration are not so difficult that seniority will not produce men that will perform them.

8202. If you select out of 100 men it is 99 to 1 against the seniority falling upon the best man, is it not?—Yes.

8203. If it is selection, supposing a man makes nine mistakes before he gets to the right one, it is only 10 to 1 against his getting the best man?—If you have 100 men to select out of you might just as likely be wrong.

8204. Not so likely to be wrong as when you take seniority?—Unless you give me the grounds on which you would select I cannot say.

8205. You may say that in the whole rank, take deputy-inspectors for instance, there are some men superior to others; a man may be a good surgeon, if he can treat and cure disease well, but you may think that he would not be a good administrative officer?—Then his merit in one rank is a disqualification in the other.

8206. If that has been the rule in the service there is nothing unjust in it?—I think a man should advance gradually.

8207. Whether he is right or not?—No.

8208. (*Sir H. K. Storks.*) Do not you think that public opinion stamps a superior man and marks him out?—I do not think that public opinion reaches us.

8209. I mean public opinion in your own department as medical officers of the army, do not you think that A is known to be superior to B?—Yes.

8210. (*President.*) Do not you report to the director-general that such and such officers are superior men, that such and such officers are average men, and such and such are indifferent?—Yes.

8211. You have the means of knowing that, and could not you form a selection from those men on these grounds?—I think so.

8212. If you could, why could not another man, who has the advantages of the same observation?—If a man appears to be an indifferent medical officer I should report upon him as a medical man; I should not report upon him as to what sort of an administrative officer he would make.

8213. Could not you on the same ground tell which is the man who seems to have the most tact, the most power of command, and the most methodical habits of

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business ?—I know one instance of a man in the administrative department who did uncommonly well, and satisfied the government in a very onerous position, and to my certain knowledge he hated his profession.

8214. Have you not known instances of men taken by seniority who have been quite unfit for the position they occupied ?—I admit it.

8215. (*Mr. J. R. Martin.*) Are you not aware that the most eminent medical officers who have ever served in the British army, Drs. Robert Jackson, William Fergusson, and Henry Marshall, most emphatically scouted the ground of promotion by seniority, and furnished reasons for that, in order that there should be no mistake ?—But those were in the days when they continued as medical men in all ranks. I am a medical man, but I have very little to do now in the way of my profession.

8216. (*President.*) You would recommend for selection from the rank of assistant-surgeon to surgeon, but you would make the promotion to the inspectorial ranks by seniority ?—Amongst assistant-surgeons, if a man is a good man, showing tact in the treatment of disease, I can see why he should be selected for a surgeon, but because he has that tact in the treatment of disease, and has acquaintance with anatomy, I do not see any reason in that why he should be made a deputy-inspector.

8217. If by changes made in the promotion, the administrative officers were relieved of a great deal of the drudgery of household details to which they now are subject, and their position, therefore, became much more purely professional than it is now, would not their medical and surgical skill become a greater element in the selection of officers to the upper ranks ?—I think it would.

8218. Then selection would become more easy ?—Selection would become far more easy.

8219. As a general rule, though occasionally men very eminent in their profession have not made good administrative officers, have not the best surgeons, taking them in the mass, been afterwards distinguished as administrative officers ?—I could not answer that question.

8220. (*Mr. J. R. Martin.*) What are you afraid of in seeing the principle of selection applied to promotion in the medical department ?—I am not afraid of it, but I do not see the ground on which you would select ; you would say that a man is a good surgeon who is thoroughly acquainted with the various branches of his profession, but what have they to do with administration ?

8221. (*Dr. A. Smith.*) Does not it often occur in the West Indies that a regiment is stationed where there is an epidemic, say of yellow fever, breaks out, and are there not opportunities to see what arrangements the surgeon makes, so as to enable the principal medical officer to discover if a man is fit for administrative as well as executive duties ?—I cannot deny a case of that kind.

8222. As you well know, you send confidential reports to me, and so does every senior officer, and from them altogether I see which officers have been well spoken of, and which have not ; and in that way there is a certain amount of facility afforded, so that I am enabled to say,—This man is recommended highly by ten principal medical officers ; and this man is spoken of in a contrary way ; there can be no question as to which of these men is the best ?—I think it is possible that a man may be a very good surgeon, and a very bad administrative officer.

8223. (*President.*) Generally speaking, do you not find that the man who shows the greatest ability in one thing, shows the greatest ability in another ?—You find in civil life that great surgeons do not become great politicians.

8224. (*Sir T. Phillips.*) What are the proper administrative powers that are required in an inspector that are so difficult for an intelligent man to display ?—I do not say that they are difficult. Any man may grow up to them.

8225. What are the administrative duties that you perform, for instance ?—I have the general charge and management of the hospitals at Chatham. I have the whole of the invaliding duties ; and there are a variety of things to attend to.

8226. Do you regard it as desirable for the public service that medical men should be enabled to retire on half-pay at the age of 45 ?—I should not compel them to retire till about 57.

8227. Do you think it desirable that an individual should have the option of retiring at 45 as against the public on half-pay ?—Yes.

8228. (*President.*) That he should after 20 years' service claim an annuity for life, doing nothing in return so soon as after 25 years of service ?—I do not see any advantage to the service in that ; there is an advantage to the individuals.

8229. Is that the only ground upon which it seems to you that an individual ought to have a right, as against the public, to half-pay after 20 years, to put him on a par with the combatant officer ?—Yes.

8230. (*Mr. T. Alexander.*) You only mean it to be half pay, not full-pay at that period ?—No ; I mean that they should retire at the pay laid down in that table.

8231. (*President.*) Your scale of retirement, you think, is necessary, under the supposition that the whole service should be promoted by seniority, and that it is necessary to get rid of the men at the top to make a stream of promotion ?—I think it is founded a little on that idea ; not altogether.

8232. You stated that you were not aware whether there is any roster for service ?—I am not aware of any.

8233. Is there not at Chatham a table on which the names of officers next for service are inscribed ?—No.

8234. (*Dr. A. Smith.*) Do you not place in the clerks' office a list of the men who have been longest at Chatham, and who are therefore the persons to be sent on detached duties ?—No.

8235. Are you not aware that that system existed during my time ?—No ; you name men yourself for foreign service.

8236. But for detached duties ?—I select them myself.

8237. How do you select them ?—Generally speaking, some men come forward and ask to have the duty.

8238. (*Sir H. K. Storks.*) Those are the detached duties of the Chatham command ?—Yes ; Dr. Smith himself names the men to go abroad.

8239. (*Dr. A. Smith.*) Do you think that the assistant-surgeons at Chatham, first for foreign service, are not aware of it, are they not informed by me ?—I think they have been generally informed by you to prepare for foreign service.

8240. (*President.*) Are those the first at Chatham, or the first in England ?—I cannot answer that question. They are appointed to those duties from Dr. Smith. I cannot tell who is first for foreign service.

8241. Do you think it possible to make a roster for every officer to go upon foreign service by turn ?—Yes.

8242. Would not that leave no option with regard to particular places for which some officers might be better calculated than others ?—It would leave no option. It would be a strict roster, of course.

8243. Would it be the same in peace and in war ?—War must admit of exceptions. For general service during peace time I mean.

8244. You do not mean that for chief commands, for example, if an expeditionary force was sent out, you would not take the men first by roster ?—I think that that is a case for selection with local rank.

8245. (*Mr. J. R. Martin.*) Generally you would have a roster for the different commands ?—For routine service.

8246. (*Dr. A. Smith.*) If such a roster existed, and were uniformly observed, would it not subject a number of officers to great hardships. If an assistant-

surgeon served five years in the West Indies with serious diseases occurring, and he comes home not in good health, but good enough to go to Chatham, and he remains at Chatham until all the assistants are sent off, and then comes to the top of the list on the roster for foreign service, and a vacancy arises again in the West Indies, do you consider that I should be justified in sending that man back to the West Indies?—I think with a fixed roster every man would take his chance.

8247. (*Mr. J. R. Martin.*) Would not the result of the roster be merely to regulate the course of tropical service, and service in temperate climates?—I mean a roster the same as they have in the Ordnance Department, which I believe has satisfied them all.

8248. (*President.*) In the artillery they go from station to station in turn?—Yes, I believe they do; they are not more than three years at the station.

8249. Have you formed any opinion on the subject of confidential reports?—I think that they are useful.

8250. Do you make them yourself?—Yes.

8251. Supposing it is your duty to report against an officer, do you inform him that you have done so?—If I make any special report against an officer I should inform him that I had done so.

8252. (*Mr. A. S. Stafford.*) But take the case of a general report?—A general report is never against him; it may be unfavourable. I might say that an officer at Chatham was neglectful or not of temperate habits, or I might consider that he was neglectful of his duties, or that he was particularly versed in some particular duty.

8253. (*Sir T. Phillips.*) Which is the special report, and which is the general report in that case?—If it were drunkenness I should specially report it, and in that case the man would know it.

8254. (*President.*) If you reported that so and so was a good and well conducted man, and was a very intelligent man, you would not communicate it to him?—No, that is a general report; it helps to give the director-general an idea of the particular sort of men that there are at Chatham; if I thought a man was ungentlemanly in his conduct, I should not communicate the report upon it to him.

8255. But if you reported an officer for intemperance you would communicate it to him?—Yes.

8256. (*Sir H. K. Storks.*) Would you not report it to your own commanding officer?—No, I would report it to Dr. Smith; if I made any distinct charge against him, I should report it to the commandant. If I put an officer under arrest for any breach of discipline, I must report it to the commandant immediately.

8257. (*Sir T. Phillips.*) Do you report upon professional deficiencies?—Yes; I may report that a man is specially versed in operative surgery, or that he appears rather deficient on that head, or that he shows himself an expert operator, or inexpert, but I do not acquaint him with that.

8258. You do not enable the man to ascertain that there are deficiencies which it is highly desirable he should try to correct?—I think he is generally made tolerably well aware of his deficiencies.

8259. Do you apprize him of them?—There is no regular official information given to the man.

8260. (*Dr. A. Smith.*) Do not you require him to operate in that case, so as to improve his knowledge of operative surgery?—Yes.

8261. (*Mr. A. S. Stafford.*) Do you report against him as entertaining different views of treatment from you?—Never.

8262. (*President.*) If you had an homœopathist, and you were an allopathist, would you mention that in your report?—I should mention that.

8263. So that a man would not have a report against him that would bar his promotion and be ignorant of it?—No.

8264. (*Mr. A. S. Stafford.*) How can you call it a confidential report if you communicate it?—It is no longer confidential if the man becomes acquainted with it; it is only confidential in little matters which inform the director-general what a man is, and generally speaking, they are matters which the director-general could not discover unless the man was with him; they supply the place of personal acquaintance with a man.

8265. (*Dr. A. Smith.*) It is confidential in so far that the whole of the officers at the station are not made aware of it, but the individual is?—Yes.

8266. (*Sir T. Phillips.*) What is the practice with regard to the other departments of the army?—There is a confidential regimental report, and if I make a confidential report to Dr. Smith, accusing any man of anything, I think Dr. Smith generally writes to the man on the subject.

8267. (*Dr. A. Smith.*) If I do not I write to you to admonish him?—Yes.

8268. (*Mr. J. R. Martin.*) There is no standard rule of the service directing that such shall be done?—I am not aware of any.

8269. (*Dr. A. Smith.*) Would you say that it was not the practice of the service? Though there may not be any written rule, is it not the practice so far as you know?—Yes.

8270. (*President.*) Have you ever experienced any difficulty in establishing or in obtaining for yourself the advantages of the relative rank which your rank in the medical service gives you?—Very great.

8271. In what respect?—With respect to servants in the Crimea particularly, we suffered in that way; we could not obtain servants, and every military officer, no matter how junior he was, of any rank, got servants amongst the soldiers; no matter what our rank was, we could not get them.

8272. You had an allowance for one civil servant in lieu of the bâtman allowed from the ranks?—Yes; and though it was a liberal allowance, we could not get servants at all.

8273. Have you ever sat upon a court-martial?—No.

8274. Have you known instances of medical officers sitting on courts-martial?—No.

8275. On mixed boards?—Yes.

8276. Do you rank according to your relative rank?—No; as juniors.

8277. That is, the senior medical officer on the board ranks junior to the lowest combatant officer?—Yes; I crossed from Constantinople to Balaclava in one of the steamers that carried sick troops; there was a staff surgeon of the second-class ranking as captain on board, and there was an assistant-surgeon under him; the military officer in command was a young lieutenant in the Guards, and he, a man of not more than two years' service, had to report upon how this surgeon did his duty, which I considered was very offensive indeed; the man was old enough to be his father.

8278. (*Sir H. K. Storks.*) I suppose the instruction given to him to report upon the medical officer, was not as to how he treated the sick, but as to his general attention?—He was to report how he did his duty.

8279. (*President.*) You could not make the surgeon report upon himself?—No; but it was offensive to require this young lad to report how the surgeon did his duty. I think that the service would have been much more benefited if the surgeon had been called upon to report upon the other.

8280. The rule as to the seniority of combatant officers in charge of troops is, that the commanding officer reports upon every person; and it happened in this case that there was an officer very much junior to you?—Yes.

8281. Surely the rule is a sound one, that the officer in command should report?—He might report militarily.

8282. He would report militarily upon a medical officer; he could not report medically upon him?—He was to report how he did his duties.

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8283. The lieutenant-colonel reports upon a surgeon, though he has no more medical knowledge than an ensign?—Perhaps he has not; but it is not so offensive.

8284. Do you propose in your recommendations to make any difference in the relative rank?—Yes. I propose to give them a grade higher.

8285. You would make an assistant-surgeon upon entrance a lieutenant?—Yes.

8286. And after a certain number of years, a captain?—Yes.

8287. You would make a surgeon a major instead of a captain?—Yes.

8288. After any number of years would you alter his position?—Yes. I would put him on the same footing as a military officer.

8289. You might in that way have a surgeon ranking above the lieutenant-colonel commanding the regiment?—That would not signify, as it gives him no military command.

8290. But according to you, if he sat according to rank on mixed boards or courts-martial he would be president over the head of the lieutenant-colonel?—I would not put him on courts-martial, except where medical officers were to be tried.

8291. Is there not a flaw in your proposal, that a case might occur in which the relative rank of a surgeon in a regiment might be higher than that of the officer who was in command of the whole?—It is merely relative rank; it gives no military command.

8292. (*Sir H. K. Storks.*) Would it not give the choice of quarters?—Always subordinate to the commanding officer. A captain in a regiment may be a lieutenant-colonel, but he only in his regiment is a captain. A captain in a regiment is often senior in the army to a lieutenant-colonel; and no inconvenience arises from it that I know of.

8293. (*President.*) Have you any other observation to make upon the relative rank and precedence of medical officers?—Nothing further; I should wish their relative rank to tell in all respects, except in command; the medical officer wishes for no command at all. He wishes to have substantive rank, whatever it may be.

8294. They stand in the "Army List" after the commissariat, for example, and that you object to, do you not?—I think they ought to stand before them.

8295. (*Mr. J. R. Martin.*) Has it not happened that medical officers have performed military duties efficiently and have fallen back subsequently to their proper duties, without a thought of what had passed?—Yes.

8296. (*Mr. T. Alexander.*) Have you any objections to the first-class staff-surgeon wearing a brass scabbard?—I think that there should be nothing in his uniform that would place his rank below that of a field officer; I think that his rank should tell either way.

8297. (*Mr. J. R. Martin.*) You think that consideration should be shown to his feelings?—Yes.

The witness withdrew.

Dr. Francis Shortt Arnott examined.

Dr. Francis S. Arnott.

8298. (*President.*) What is your rank in the Indian service?—Surgeon.

8299. Are you retired?—No.

8300. Are you on furlough?—Yes, on sick leave.

8301. Where have you served?—In the Bombay presidency.

8302. In the field?—Yes.

8303. In what campaign?—In the campaign of 1848 and 1849, at Mooltaun and Guzerat, and in the subsequent advance on Peshawur. I was in medical charge of the 1st Bombay fusiliers. I have a medal and two clasps for my services.

8304. Can you state the organization of the Bombay medical department?—It is composed of assistant surgeons, surgeons, superintending surgeons, and a medical board over the whole. These are all commissioned officers; but there is also a subordinate medical department, the seniors of which are warrant officers, of whom a few have got the rank of sub-assistant surgeon, with increased pay.

8305. Does the medical board answer to the department of the director-general in England?—Entirely.

8306. Does that apply to the Bombay army only?—There is one medical board for each presidency.

8307. How are the medical officers appointed, and what is the system of promotion?—They are appointed by competition in the first instance as assistant surgeons, they are then promoted by seniority to surgeoncies, and again to superintending surgeons generally by seniority, according to the orders they may be by selection; to the medical board by seniority and selection, but generally by seniority.

8308. Who are the authorities who promote them?—The government. It is by a government order.

8309. Not by the superintending board?—No.

8310. Where there is any selection made as to the rank of superintending surgeon, who makes that selection?—I believe the governor makes the selection, it may be on the recommendation of the medical board and Commander-in-Chief.

8311. It is done by the Governor-General?—Yes.

8312. (*Mr. J. R. Martin.*) Frequently it is done upon the recommendation of the Commander-in-Chief?—Yes. Then I fancy he receives a recommendation from the medical board.

8313. (*Sir H. K. Storks.*) Is the medical board under the orders of the Commander-in-Chief of the Presidency?—He is over all.

8314. Are the advantages held out to the service sufficient to induce the best men to compete for your appointments?—I think so.

8315. Do medical men share in honorary distinctions with combatant officers in the field?—To a very small degree.

8316. Not so much, you think, as they are entitled to?—I think not.

8317. Were the duties of the medical officers during the campaign of 1848 and 1849 very arduous?—Yes, very.

8318. What was the number of medical officers with each regiment during that campaign?—For part of the campaign I had only two assistants, but for the greater part I had three. None of the native regiments had more than one medical officer.

8319. (*Mr. J. R. Martin.*) What was the strength of your battalion?—About 900.

8320. (*Sir H. K. Storks.*) Were you in a European regiment?—Yes.

8321. (*President.*) How comes it that the native regiments have so few medical officers?—I do not think the arrangement a good one. No regiment ought to go on field service with less than two medical officers; European regiments ought to have four.

8322. Have you known any inconveniences result from the present small number of medical officers?—Yes; even in the ordinary duties of a camp great inconvenience sometimes results from it.

8323. (*Sir T. Phillips.*) Is there less disease in the native regiments than in the European regiments?—Yes, less.

8324. (*President.*) You state that you did not get your share in the distinctions of that campaign, you mean that you were not mentioned in the Gazette?—We were not mentioned in the Gazette. No medical

officer of the Bombay corps was mentioned in any despatch.

8325. Is that the practice?—I fancy it was an oversight, but the newspapers took it up.

8326. Was the omission rectified afterwards?—Never; some letters were circulated, but nothing was printed in orders or in a despatch.

8327. (*Sir H. K. Storks.*) No medical officer obtained the order of the Bath?—Yes, the senior medical officer did.

8328. How was that, if he was not mentioned in a despatch?—I fancy a recommendation was afterwards made by Lord Melville to the Commander-in-Chief.

8329. (*President.*) Are you certain that he was not originally mentioned in a despatch?—I am almost certain.

8330. (*Dr. A. Smith.*) What was the name of the senior medical officer?—Straker; he was made a C.B.

8331. (*President.*) Are the officers in the Bombay medical corps sufficiently numerous for their duties?—I do not think so, except for duties in the field; the duties almost always devolve upon the men who have just entered the service.

8332. In the camp you say that one medical officer alone is attached to a native regiment, but that is not the case with a European regiment?—I have very often been left with only one assistant-surgeon, and sometimes with none. It depends upon circumstances. I have generally had two, but they only remain a very short time, they are removed again.

8333. Are you, generally speaking, satisfied with the position held by medical officers in the army?—I am not. The position assigned to medical officers by the present regulations and usages of the service, is most unsatisfactory.

8334. In what respect?—I do not think that our relative rank is of any use to us.

8335. In what way?—When brought in contact with other officers on any duty, he has no rank whatever, he ranks junior to every other officer.

8336. You mean you do not rank according to the date of your commission?—Yes.

8337. What is the good, then, of giving you a commission?—No good at all; it makes me a commissioned officer, but I am the lowest grade of commissioned officer from the day I enter till I leave.

8338. (*Sir H. K. Storks.*) You take your choice of quarters according to your relative rank?—That I have had disputed. On one occasion, I was turned out of my quarters, against which I remonstrated, but all the authorities, from my immediate commanding officer to the Commander-in-Chief, decided against me. I then appealed to the Governor-General of India in Council, and got redress; but when the decision came I was about to leave the station.

8339. You share in the batta and in prize money?—In prize money we do not share according to our relative rank. Our superintending surgeon ranks as lieutenant-colonel, but in prize money he shares as major.

8340. (*Mr J. R. Martin.*) In practice, did it not happen to you that you were placed on committees without strict reference to your rank, through the kindness and consideration of your brother officers?—It has often occurred to me to be put on as president of committees by courtesy, which I ought not to have been.

8341. (*President.*) Is there any general rule laid down upon the subject?—Nothing is properly defined in regard to our rank.

8342. (*Sir H. K. Storks.*) Is there anything laid down to the contrary?—There is a written rule.

8343. Where is that?—In our regulations; the order was published by the President of the Council of India in Council, on the 25th November 1848.

8344. (*Mr. J. R. Martin.*) The revival of that rule was made to apply to you afterwards in your regiment, and then you fell to the bottom of the list?—Yes; in 1847 or 1848 it was re-issued, and then on all committees I was junior, whoever were the members.

8345. (*President.*) When you sat as president, or according to the date of your commission, it was prior to the re-issue of this regulation; since then you have sat junior to the youngest combatant officer?—Yes.

8346. For what purpose do you consider that a commission is given to a medical officer?—I consider that it is given to a medical officer for the same reason that it is given to a military officer, namely, to give validity and force to his authority in the discharge of his duties.

8347. It does that, does it not, so far as his medical duties are concerned?—Scarcely that; I am not sure that I am justified in placing a man under arrest in my hospital.

8348. (*Sir H. K. Storks.*) You would feel no hesitation in placing a soldier in the guard-room?—I never put a soldier in the guard-room.

8349. There is no regulation forbidding that?—I can place him under arrest by directing my sergeant to make him a prisoner; but I am doubtful, whether, of my own authority, I could do it.

8350. (*Sir T. Phillips.*) How can you authorize a sergeant to do that which you believe you cannot do yourself?—I am not quite sure about it, but I believe I have that power.

8351. (*Sir H. K. Storks.*) To all intents and purposes the real order which places that man in confinement is the order of a superior officer?—Yes.

8352. Therefore, you, in your relative position, having given that order to the sergeant, are the person who gave the order?—I am not quite sure that I am justified in giving the order; my sergeant is responsible for the proper control of the hospital; I am not sure whether he does not do it of his own responsibility; I am not sure that I have any warrant for it, and that my authority might not be disputed.

8353. (*President.*) On the occasions when you sat as president, did the other members raise any objection?—I never heard of any; I was always looked upon as a most useful member on such committees, and I generally found that my opinions were adopted and acted upon, and the other members never grumbled.

8354. Since the issue of that order the authority which your commission gave you has been infringed by a subsequent order emanating from a less high authority than that which conferred the commission upon you?—That is entirely my opinion; my commission was given to me by the governor in council, but the commander-in-chief's orders infringed my commission. When a medical officer is placed on a committee by the orders of the government, he takes his proper place on that committee; it is only under orders issuing from the military authorities that he is deprived of his proper position on such duties.

8355. If the governor-general ordered a committee, and placed upon it a military officer of lower rank than yourself, would you take precedence of him?—Yes.

8356. (*Sir H. K. Storks.*) I suppose that is according to a local regulation?—I rather think it is a regulation in the royal army.

8357. Are the regulations for the Bombay presidency the same as those for the Bengal presidency?—Yes. I will put in the order.

[Order, dated Fort William, 25th November 1848.

12. Agreeably to the practice in Her Majesty's and the Company's service, when committees, composed of military and medical officers, are convened by the Commander-in-Chief, the president of such committees is invariably a military officer, and the members take precedence relatively to each other according to the succession in which they are named in the order convening the committee, viz: military officers first, and then medical officers.

13. In convening such committees, Commanders-in-Chief are especially careful that the members shall, as far as possible, be officers whose position relatively to

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each other, as members of the Committee, does not materially differ from that which is assigned to them for the purpose of regulating their claim to quarters, and prize money.

14. When committees are convened by government, composed of military and medical officers, or of these and civilians also, the relative precedence of the members should, as is the case with commissions appointed by Her Majesty's government, be that in which the members are specified in the orders convening the committee. In such cases, the president may belong to any branch of the service.]

8358. (*President.*) What you wish is that the relative rank should confer the same privileges that it did prior to the reissue of that order?—I think so; for the good of the service that ought to be the case.

8359. You do not mean that a medical officer should command on parade?—No.

8360. (*Dr. A. Smith.*) Supposing that you were present at mess with six or eight ensigns, you having the rank of captain; if any disturbance took place would you not consider that you were justified, as having the rank of captain, in putting the officer who was in the wrong under arrest?—I consider that I would not have the authority to do that.

8361. You admit that you are an officer?—Yes. I believe my duty there would be to point out to the senior officer present the irregularity that was going on. I think that my authority might be disputed on such an occasion.

8362. (*Mr. J. R. Martin.*) You have no certainty as to any power which may be attached to your commission in any way whatever?—None.

8363. (*President.*) Would you under the existing state of things make it a rule that no medical officer should sit on a mixed committee or a court-martial?—I prefer not sitting at all on mixed committees. I prefer being ordered to appear as a witness. I would relieve medical officers of all such duties rather than they should occupy the position which they now do.

8364. (*Mr. J. R. Martin.*) The position being hurtful to their feelings?—Yes.

8365. (*President.*) Are the emoluments of your service satisfactory?—I think they are.

8366. They are larger than in the Queen's service, are they not?—Yes, people out in India must be better paid. Officers of the royal army serving in India receive the same rates of pay as officers of the company's service.

8367. Is the mortality among medical men greater than among other officers in your service?—I believe it is.

8368. (*Mr. J. R. Martin.*) Is it generally throughout India the same?—Yes, I believe so.

8369. Are the superintending surgeons numerous enough to conduct the duties that are required of them?—I think not. I think we require more.

8370. They are the only officers having inspectors' duties to perform?—They are.

8371. Can you give the number in each rank in your presidency?—Three members of the medical board; five superintending surgeons; forty-five surgeons. The assistant-surgeons vary considerably; of these a number are generally absent in England, and the duties fall very heavy on the remainder, to which, indeed, they are barely equal.

8372. (*Sir T. Phillips.*) Have you an average term of years that an assistant-surgeon serves before he becomes a surgeon?—It varies; I was 16 years assistant.

8373. Within what limits would it fluctuate?—It fluctuates from 13 to 16 years.

8374. Is 13 years the shortest time that you have known?—I believe it is the shortest time that has occurred within my period of service. I know that men who were in the service when I entered were promoted in six years, but that was on account of the augmentation that took place in 1824.

8375. The shortest period that you have known men serve in that grade is 13 years?—Yes.

8376. The longest is how much?—16; promotion is getting slower every day.

8377. How many years have you been in the service?—I have been 25 years in India, and three years at home.

8378. You have a general experience of 28 years?—Yes.

8379. (*President.*) Do you find that the proportion of inspectors to the executive officers is not sufficient in your service?—I consider not.

8380. An augmentation has recently been made? I am not quite aware of that; I have heard that there has not been.

8381. The direction of the department rests entirely with the board, does it not?—Yes.

8382. How is that board constituted?—Generally the three senior members of the service.

8383. Lord Dalhousie recommended that instead of being the three senior members of the service they should be taken by selection?—I think that is a very good way. Incompetent men, I think, ought to be overlooked.

8384. Would you discontinue the board and appoint one man to be selected?—I should not approve of that at all.

8385. On what ground?—Because I consider the duties of our medical board sufficient for any three men.

8386. You think that the duties are too onerous to be discharged by one man?—Yes; we have military duties, civil duties, and naval duties to perform.

8387. How have you naval duties?—We have all the Indian navy.

8388. (*Sir H. K. Storks.*) That is only in the Bombay Presidency?—Yes, but it applies strongly to that Presidency.

8389. (*President.*) If you had staff enough given to one man to execute the duties performed by three, would not the concentration of the duties in one be an advantage as against a board?—Yes, but in that case I would have a director general over the board.

8390. (*Mr. J. R. Martin.*) The board being in the form of a scientific council?—Yes.

8391. (*President.*) Would you give them authority?—No, the director-general should be supreme.

8392. (*Sir T. Phillips.*) The council would simply be his advisers?—Yes.

8393. (*President.*) And to relieve him of detail and routine duties?—Yes, entirely; he could not get through them.

8394. You have mentioned that the duties are civil, military, and naval: what are the military duties of the board?—They have the supervision, control, and direction of the whole duties of the executive medical officers, and the selection, training, and education of a large subordinate establishment. They are, besides, very much engaged in details, for want of a due proportion of staff by which this part of the duty might be carried on.

8395. (*Sir T. Phillips.*) How do you mean that they have the control?—They examine their practice.

8396. In what shape?—They have the returns and they examine them; they have their cases and they examine them; they have all the documents.

8397. Do you mean, that practically, they can judge whether a particular soldier has been treated properly by a medical man?—It is supposed so; the cases are sent in periodically.

8398. Can there be any reality in it?—I think so. Every medical man can judge of the manner in which cases are kept.

8399. (*President.*) They exercise the same power in that respect as the director-general does in the Queen's service?—Yes, I fancy so.

8400. (*Sir H. K. Storks.*) Have they confidential reports to make to the Commander-in-Chief?—I believe they do, but I am not positive.

8401. (*President.*) They have the discipline and management of the whole medical department?—Yes; and the recommendations for vacancies for

appointment, which are very seldom made, except by seniority.

8402. Are not the stations given, some being much better than others, as rewards of superior merit?—Sometimes they are, but not by the medical board; generally by the government or the Commander-in-Chief.

8403. All the plums are in the hands of the Commander in-Chief and the government?—Almost entirely, that is what I mean. Our medical board is inefficient, they have power, but they have no power directly to reward or punish.

8404. (*Mr. J. R. Martin.*) Has not this arisen from their being appointed on the seniority principle?—I cannot say the cause.

8405. (*President.*) Do you consider an alteration advisable in that respect?— Undoubtedly; if a director-general is appointed, he ought to have the whole power and authority.

8406. (*Mr. J. R. Martin.*) Power to recommend?—Yes.

8407. The real power being in the governor-general and the Commander-in-Chief?—Yes, power to confirm always rests with them.

8408. (*President.*) Do you think that the constitution of the medical board could be improved by introducing the civil element into it?—Certainly not.

8409. What are the duties of superintending surgeons?—They are very similar to those of deputy-inspector in the royal army. Their duties are chiefly paper work, checking, examining, and comparing returns, indents, and so on.

8410. (*Mr. J. R. Martin.*) And reporting?—Yes.

8411. (*President.*) Is there any statistical department under the medical board?—None distinct.

8412. Are there any army statistics published in the Indian army, with regard to the rates of mortality and the amount of sickness?—If at all, only through individuals, not by government.

8413. (*Mr. J. R. Martin.*) They are not made available for the purposes of European science?—No.

8414. Were there a sanitary department at the India House, would not that defect be remedied?—Yes.

8415. (*Sir T. Phillips.*) Does the superintending surgeon treat disease?—Never.

8416. (*President.*) Does he inspect hospitals?—Yes; but he very seldom interferes with the treatment.

8417. (*Sir T. Phillips.*) He never treats at all, does he?—No.

8418. (*Dr. A. Smith.*) He may be consulted by the surgeon, may he not?—Undoubtedly; I very often consulted my superintending surgeon.

8419. (*Sir T. Phillips.*) That would be a matter of option with you?—Yes; I fancy that every man does it; when a medical man comes into a hospital the regimental surgeon very likely points out difficult cases to him.

8420. Is the surgeon who has the treatment of disease, the person actually responsible for it?—Yes, of course.

8421. He is not required, unless he thinks fit, to consult the superintending surgeon?—No, I do not think he is; but I think every man would do it.

8422. (*Dr. A. Smith.*) Is it not generally understood that if a senior officer comes in, it is usual, when there is a bad case, to consult him?—It is the practice, and I think every man would do it.

8423. Is it not generally understood that he ought to do it?—I think so; I always made a point of doing it.

8424. What are the duties of a regimental medical officer for each day?—In India all duty must be done in the mornings and evenings. As soon as the patients had time to clean and dress themselves, and the ward could be swept out and arranged, I paid my visit. I saw the new admissions; then visited my former patients; I inspected the hospital, the diets, &c., signed the reports, sent off letters, &c.; I next visited the cells, and perhaps the barracks, and then saw the sick officers, or any of their families who were sick; that was the general routine.

8425. (*Mr. J. R. Martin.*) And the same in the evening?—Yes.

8426. (*Sir T. Phillips.*) Is all disease treated in the hospital?—Yes, except officers.

8427. (*President.*) Have you any general hospitals as well as regimental hospitals?—There are general hospitals. There is a general hospital in Bombay for all sorts of Europeans.

8428. I mean an army general hospital, for the admission of all soldiers, irrespective of the regiments to which they belong?—No, every regiment has its own hospital; there is no other.

8429. Can you carry that out in the field?—Then we have general hospitals.

8430. (*Sir T. Phillips.*) Do you call it a field hospital?—Yes.

8431. (*Mr. J. R. Martin.*) Which is only kept up for the occasion?—Yes.

8432. (*President.*) What assistance has a regimental surgeon in the performance of his duty?—I generally had from one to three assistants.

8433. How are they employed when they are first appointed?—They are generally attached to European regiments, for the purpose of learning their duty and getting acquainted with the habits and so on of the soldiers.

8434. How long does he serve so before he practices?—It varies very much, according to the requirements of the service, I should say probably from four months to a year or a year and a half.

8435. During that time he is more in the position of a pupil?—Yes; after a time I always give them a share of the practice.

8436. Did you ever serve in the navy?—No.

8437. (*Sir James Clark.*) Is ever an assistant obliged to serve in the navy on your station?—According to the present rules he is obliged to serve in the navy.

8438. (*Mr. J. R. Martin.*) He commences his services in that way, does he not?—Yes.

8439. (*President.*) As I understand you all the sick are treated in the regimental hospital, except in the field?—Yes, and there they have a general hospital.

8440. Do the patients wear their own clothing in your hospital?—Never.

8441. Do you put them under stoppages?—Yes, always, except he is a wounded man.

8442. What amount of stoppages do you put them under as compared with their pay?—I think the amount is $3\frac{1}{2}$ annas a day, which is about sixpence.

8443. What proportion of their pay is that?—I think a quarter or a half.

8444. Is a man's pay 2*s.* a day?—Not so much; but I cannot at this moment speak exactly as to the amount.

8445. Are you speaking of a European regiment? Yes.

8446. What does a sepoy receive?—A sepoy receives from eight rupees and upwards a month.

8447. Is the stoppage the same?—There is no stoppage in native regiments; they are not dieted in hospital, it is only the Europeans.

8448. (*Dr. A. Smith.*) If a man is wounded or injured so as to require to go into hospital do you make no stoppage?—No.

8449. If a man catches fever on sentry do you exact a stoppage?—Yes.

8450. Why is that, when you do not in the case of a wounded man?—It is an indulgence granted to a man who is wounded, or injured on duty.

8451. (*President.*) Your hospitals are supplied, I believe, by the commissariat?—Entirely, and very well.

8452. The hospital establishment is very good and efficient, is it not?—Yes.

8453. Will you state how it is divided; what is the first officer in it?—The apothecary.

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8454. What are his duties ?—Generally to see the practice of the surgeon carried out; to see all his prescriptions made up and given; he also superintends the apprentices, and in the absence of the surgeon he can prescribe.

8455. Is that apothecary a part of the commissariat ?—No.

8456. I thought the whole hospital establishment was a branch of the commissariat ?—No.

8457. Is not the steward a part of the commissariat ?—No; he conducts the commissariat duties; he is not part of the commissariat.

8458. The steward very much answers to the purveyor in this country, does he not ?—Very much.

8459. (*Mr. J. R. Martin.*) Except that he is a trained officer for the duties from his boyhood ?—He is a trained officer; he is entirely under the orders of the surgeon.

8460. (*President.*) Will you describe from what class he is taken ?—He rises from the grade of apprentice; he begins as a probationer; he is afterwards promoted to an apprentice; he then becomes assistant-steward and assistant apothecary; he is then made steward; his highest rank is apothecary.

8461. What medical education do they receive, if they are allowed to prescribe in the absence of the surgeon ?—They are educated, generally speaking, in our large hospitals, and very well educated; they are afterwards promoted, after examinations, and by competition.

8462. (*Mr. J. R. Martin.*) They are educated in the medical colleges ?—Yes.

8463. (*President.*) What age is a man generally when he becomes steward ?—I should think probably 30.

8464. Are they generally half-caste ?—Yes; but they may be Europeans or native Portuguese.

8465. And are they warrant officers ?—Yes.

8466. (*Sir T. Phillips.*) What is the man apprenticed to ?—To the hospital to learn all the duties. From apprentice he becomes assistant-apothecary and steward; next steward, and then apothecary.

8467. (*President.*) He probably serves for some years as steward ?—Yes, probably from five to eight years.

8468. At the expiration of his service as steward, before he becomes apotheeary, do you exact from him any fresh medical study ?—There is no examination or anything of that kind; he is generally promoted by seniority unless there is some great objection to him.

8469. (*Sir T. Phillips.*) Is there any examination to ascertain that he has the requisite professional knowledge ?—As apprentice, there is always; but the examination, I think, ceases after he is out of his apprenticeship.

8470. At what time is he examined, at the close of his apprenticeship ?—He is examined first as a probationer, to see whether his English education fits him for the place he is put into.

8471. That is an examination in language only ?—Yes; his knowledge of English writing and spelling; afterwards the examination is more extended, and he is then admitted as a second-class apprentice, if he gives satisfaction.

8472. Do you mean that he is examined on more subjects ?—Yes, on medicine; a few questions are asked. He is then admitted as a second-class apprentice, and after a while, and further study on his part, and other examinations, he is promoted to be a first-class apprentice, he is then examined again.

8473. When the apprenticeship ceases ?—Yes. He is not promoted to be assistant steward, or apothecary till he undergoes a satisfactory examination.

8474. (*President.*) Under whose orders does he act, the steward ?—Entirely under the surgeon.

8475. (*Sir T. Phillips.*) Is the apprenticeship for a defined period ?—No. It is more according to the talent of the boy. If he is a sharp boy he gets on quicker.

8476. (*President.*) Both apothecary and steward are entirely under the orders of the medical officer ?—Entirely.

8477. Who manages the accounts, does he ?—The steward manages all accounts with the commissariat.

8478. Are they audited by the medical officer ?—Entirely.

8479. Does not that give a good deal of trouble to the medical officer ?—Yes, at first, after a time it does not.

8480. It is a matter of routine ?—The thing becomes simple when completely and thoroughly understood, but of course at all times requires time and attention.

8481. Does the steward purchase all supplies for the hospital ?—None. He receives them from the commissariat, and issues them. He is not allowed to purchase any.

8482. Are all contracts made by the commissariat, whether for furniture for the hospital, or for food, clothing, and medicine ?—Not medicine. That is distinct. We have a medical storekeeper.

8483. How are medical comforts supplied ?—By the commissariat.

8484. And they are put into the hands of the steward as storekeeper to the hospital ?—Yes.

8485. Then he issues them under the directions of the medical officer ?—Yes.

8486. (*Mr. J. R. Martin.*) And he accounts to the commissariat officer ?—He is not accountable to the commissariat for his expenditure.

8487. (*President.*) Do you not think that in all matters of account with the commissariat, the medical officer ought to be relieved of all responsibility ?—Some people might like it. I think it might be an improvement.

8488. You cannot allow them to be performed without responsibility attaching to them ?—No, but if that involved diminishing the surgeon's authority over the steward, I would certainly object to it.

8489. Do you think it important that the steward should understand he is the servant of the medical officer ?—Yes, most certainly.

8490. (*Mr. J. R. Martin.*) When the surgeon may happen not to be a good man of business, would it not be wrong to embarrass him with those accounts ?—It might be an advantage to relieve him then.

8491. (*Sir T. Phillips.*) To whom would you give the duty if you took it away from the surgeon ?—I do not know that the steward ought to be held responsible; you could not put him under the quartermaster.

8492. Either the surgeon, or one of the assistant surgeons might always undertake the duty ?—According to our system the surgeon always does.

8493. (*President.*) Suppose in your service the assistant-surgeon gave very extravagant orders, as to the quantity of diet to be issued, or the quality, would the steward make any remonstrance ?—He would make no remonstrance, but would bring it to the notice of the surgeon. He has no right to remonstrate.

8494. To the notice of anybody else ?—No; he would report to the surgeon only.

8495. He is not the servant of any other authority ?—No. Generally speaking, he would do what was necessary.

8496. He would abate the quantity, but acquaint you with his opinion as to the unfitness of the supply ordered ?—He would bring the matter to the notice of the surgeon; if he had not an opportunity of getting his orders he must obey the orders he has received.

8497. (*Sir T. Phillips.*) Would he ever report to the commissariat, that in his judgment there was an extravagant outlay ?—Never.

8498. (*President.*) If repairs were required in a barrack, or the sewerage was defective, or any alteration were necessary in a building, by whose authority would it be done ?—I generally apply to the engineer of the station.

8499. What does he do?—He either comes, or sends some of his people to examine it, and then it is done, or otherwise.

8500. Do you mean that he has a veto, and can say,—I do not think this is necessary?—Yes; he has a veto. I have often recommended repairs and alterations that have not been carried into effect.

8501. Does he object on the ground of the expense, or does he dispute your professional conviction?—No, I never had that disputed; it is generally on the score of expense, and the difficulty of getting the necessary sanction to the proposed alteration.

8502. You are naturally a good deal acquainted with the condition of the European soldier in India, has his diet been much improved of late years?—Yes; in every respect his diet and accommodation are much improved.

8503. In what respect is the diet improved?—A new scale was issued five or six years ago, which was considered a very great improvement; it allowed a better supply of vegetables.

8504. Had there been any scorbutic tendeney before that among the men?—Yes.

8505. Have you ever compared the ration of the soldier in India with the ration of the Queen's troops in England?—No; but the ration in India is considered quite equal to the ration in this country, and probably superior.

8506. What quantity of meat is allowed?—A pound.

8507. With bone?—I think now the bone is to be taken out as much as possible. I have known a pound and a half given where it was bony.

8508. That was to compensate, probably, for the inferiority of the meat?—Yes. The accommodation for the men is very much improved.

8509. In barracks?—Yes. On the Bombay side they have been building new barracks, and they are of a very superior description. But at the old stations the barrack aeeommodation is still inferior.

8510. What space do you give to each man in a barrack?—I think about 1,400 feet; barracks and hospitals are very much alike.

8511. (*Sir T. Phillips.*) Is there as much space in a barrack as in a hospital?—I think so.

8512. (*Mr. A. S. Stafford.*) You stated that the amount of sickness was greater among the European troops than among the native troops?—I do not know that I stated that; it is the case.

8513. Do you attribute that to any other reason than the effect of climate upon foreigners?—I think that is one reason.

8514. Do you think that that one reason is sufficient to account for the larger amount of sickness among European troops?—There are other causes. Every body knows that a European soldier is a very imprudent man.

8515. (*Sir T. Phillips.*) In what respect?—In respect to drink and exposure.

8516. (*President.*) The mortality among the native troops, I believe, is very little in excess of the mortality, among the native civil population?—I fancy not at all.

8517. Whereas the mortality among British soldiers in England is about double that of the civil population?—Yes.

8518. That shows a much greater degree of health in the sepoy?—Yes; I think the sepoy ought to be the healthiest man, and he always is selected as the healthiest man, but then he does duty only in his own country.

8519. So is the soldier here selected as the healthiest man?—Yes; but he does duty out of his own country.

8520. But the sepoy does not drink?—Very seldom; some of them very freely.

8521. But not like a European?—No.

8522. Is the sepoy accommodated in a barrack?—No, they are accommodated in huts.

8523. Do they build them themselves?—Yes, being allowed a certain sum for them.

8524. What sort of construction are they?—They are little places with walls about four feet high, and a thatched roof with corresponding height.

8525. Do they close them up completely?—I think so; no native can ever enter his house standing upright.

8526. How do they ventilate it at night?—I think by shutting up the door.

8527. It has been stated that one of the causes of the superior health of the sepoy, as compared with the European soldier, is that he does not sleep with numbers in an unventilated barrack-room, but that he is hutted?—Two men cannot sleep in a hut unless they are of the same caste; the prejudices of caste would prevent a number of men sleeping together, but their huts are small and often crowded with their families.

8528. How many are there in a hut?—There may be several in a hut if they are of the same caste, and have not families.

8529. (*Sir T. Phillips.*) They sleep out of doors, do they not?—Yes.

8530. Is the sepoy soldier as much exposed, or is he more or less exposed in service than the European soldier?—Far more so.

8531. So that military service is not lighter, but heavier upon the sepoy than upon the European soldier?—Yes, in a camp where there are European troops and natives, the greater part of the guards are taken by the natives.

8532. They are exposed to night service?—Yes.

8533. (*President.*) Is there much night duty?—They take almost all the sentry duty.

8534. How many nights are they in bed, and how many nights on guard?—It varies. I believe about three nights in bed, but it varies much according to the exigencies of the service.

8535. (*Mr. J. R. Martin.*) Were the men much employed on night duty?—No; Europeans are very seldom employed on guards, and are not much exposed at night.

8536. At Aden were they employed on guards? A treasury guard was on.

8537. On field service, of course?—Yes.

8538. Do they suffer from night duties in field service?—I do not know that they do.

8539. (*President.*) In your barracks in India where this large space is given, are there urinals separate from the rooms, or is there a large tub?—There is generally a separate room.

8540. With water turned on?—Yes, the men make their urine into a kind of channel, and it is carried off through pipes, by tiles into a cesspool.

8541. There is no stream of water running?—I never saw it; it is supposed to be washed every day, probably twice every day.

8542. The place is separate from the room?—Yes.

8543. Are the channels made of glazed tile to carry off the urine?—I have never seen that. It would be a great improvement.

8544. What do they use?—Generally granite.

8545. How are the men accommodated in the field?—In tents; we have excellent tents for European soldiers, with high walls and double flies, so that the men receive good protection in all weathers.

8546. In what other respects could the condition of the European troops, in your opinion, be still further improved?—Our barracks are very inferior; though some are very good. As to dress, I think there is great room for improvement; for soldiers in a hot climate the present dress is far too heavy.

8547. Are you speaking of the head dress?—The whole.

8548. What would you substitute for the present dress?—I would discontinue the full dress altogether. A man is never comfortable in it. I would discontinue the shako. My own regiment, under Lord Melville, marched to and from Mooltaun and Peshawur in undress and forage caps. I believe that is the best dress for any duty in India. A padded cover is made to come over the cap; it is quilted with cotton.

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8549. Is there anything to hang down?—Yes; to protect the back of the neck.

8550. Is that as good as a turban, which protects the temples?—It is a substitute for the turban, and it is more easily put on, the turban takes time to put on and comes loose.

8551. You would do away with the coatee or tunic, and only retain the shell jacket?—Yes. The shell jacket is the best dress for any man to do duty in in India.

8552. What would you put next to a man's skin?—I am rather singular in that; I do not approve of flannel.

8553. Why?—I think that a man is too warm without it, and that it irritates the skin.

8554. What would you substitute?—A cotton shirt.

8555. (*Sir T. Phillips.*) Does flannel, in your opinion, increase the discharge from the skin?—I conceive that it does.

8556. (*Sir James Clark.*) Does it not protect a man from chills?—I do not know that it has that effect.

8557. (*Mr. J. R. Martin.*) In campaigning in the north of India, in cold weather, would not flannel be useful?—There might be a difference there.

8558. (*Sir James Clark.*) Are you speaking from your own experience upon a pretty large scale?—Yes, and from my own personal feelings.

8559. Is it the general opinion of medical officers in India that that is the case?—I am giving my own opinion.

8560. (*Mr. J. R. Martin.*) It has been stated before this commission, that when European troops take the field in India, the commissariat officer is very much disposed to favour the troops in front, and neglect the hospital supply, have you ever experienced such neglect?—Never; my supplies always gave me perfect satisfaction.

8561. Your hospital was as well supplied as the soldiers in front?—Quite so. Better most likely.

8562. Did you ever hear of this complaint before?—Never till this moment. It is an imputation on the commissariat that I never heard of before.

8563. (*President.*) What liquors are supplied to the European soldier in India?—Arrack is almost the only spirit.

8564. Is that given as a ration?—Yes; a man can have 2 drams daily, after 12 o'clock; none in the morning. Soldiers are very well off now, they get very liberal supplies of malt liquor, which, with tea and coffee, they are encouraged to take in lieu of the ardent spirits.

8565. In lieu of arrack?—Yes. They are encouraged to drink malt liquor instead.

8566. (*President.*) What is your experience of the sanitaria in India?—My experience is not very large, but I am not sure that anybody's experience is quite sufficient to enable him to form an opinion, what they are, or what they are not.

8567. (*Mr. J. R. Martin.*) They are found generally to be the best for the prevention of disease, rather than for the cure?—Yes. I do not think our sanitaria have had a fair trial, because they have generally put up temporary barracks, with anything but proper accommodation.

8568. (*President.*) Where are they situated?—Generally on the hills.

8569. (*Mr. J. R. Martin.*) The whole matter requires to be scientifically and properly examined?—Yes.

8570. (*President.*) What amusements has the European soldier in India?—They are encouraged to amuse themselves. Their favourite game is long bullets.

8571. A sort of bowls?—It is throwing an iron ball, a six pounder; each man showing his strength by throwing it.

8572. Is it possible to have very athletic games in so hot a climate?—They play cricket, quoits, fives, skittles, &c., but I would give them more opportunities for exercise and amusement in the shape of gardening, pioneers work, &c.

8573. I suppose very early in the morning?—Yes, in the mornings and evenings. They have for indoor recreation draught boards, billiard tables, and an excellent library.

8574. And baths?—Yes.

8575. Do they pursue their trades?—Yes.

8576. How do they pursue their trades?—In my regiment we had shoemakers, tailors, farriers, carpenters, bookbinders, and watchmakers. They are all encouraged, but sometimes they have not very much to do.

8577. (*Sir T. Phillips.*) For whose profit is this done?—Entirely their own.

8578. (*Mr. J. R. Martin.*) Is that privilege attended with any improvement in the conduct and health of the men?—I think so.

8579. In both?—I think that every man who enjoyed that privilege considered he was bound to be a good man. The privilege could be taken from him.

8580. It is no detriment to him as a soldier?—I do not think so.

8581. (*President.*) Is there any restriction as to number?—Yes. There would be necessarily.

8582. (*Sir T. Phillips.*) Is this a privilege not exercised without permission?—No. It may be done without permission being asked, though some men get permission. The tailors are regimental tailors, who are employed in making up the clothes of the soldier.

8583. (*Mr. J. R. Martin.*) The privilege, I suppose, is only given to steady men?—Certainly.

8584. (*President.*) What is the mortality in a European regiment in India?—I think in my regiment it was five per cent., including cholera.

8585. But exclusively of cholera?—One year when they had cholera my loss was 15 per cent.; and in another year when they had none my loss was down to $1\frac{1}{4}$ per cent. I fancy my regiment was sometimes as healthy there as any regiment in this country.

8586. Do you know what the mortality is in the native regiments?—I do not know, but the mortality is less in them.

8587. (*Sir T. Phillips.*) With regard to the diet of native regiments, in what respect does it differ from the diet of the European?—It consists almost entirely of vegetables.

8588. What proportion is animal food?—Some of them never touch it.

8589. (*President.*) How is it supplied in the field? Where does the native get his diet?—He generally depends upon the supplies to each encampment. There are men who march along with the force.

8590. It is not bought by them of the commissariat?—They are entitled to it from the commissariat, if provisions are scarce or dear.

8591. Otherwise they trust to volunteer suttlers?—Yes.

8592. (*Sir T. Phillips.*) The ration consists of what he chooses to purchase?—Yes. The Mussulmans eat a good quantity of animal food, but not the Brahmins.

8593. Do the natives drink spirits?—Yes, but it is forbidden.

8594. Are they largely taken, or only as the exception?—The lower classes take spirits largely.

8595. Does the Hindoo soldier drink?—The high caste men very seldom, the low caste men more.

8596. Notwithstanding these low caste men drink, is their health good?—I have known low caste natives injure their health.

8597. (*President.*) Is the army to which you are attached high caste or low caste?—It is a mixed caste.

8598. There is drinking in it?—Yes.

8599. But not so much as in the Madras army?—I do not know that there is.

8600. (*Sir T. Phillips.*) The health of your army, though of mixed castes, is superior to that of Europeans?—Yes. The men are serving in their own country.

8601. Is a native soldier as long lived as a man who is not a soldier?—I fancy he is.

8602. (*Sir James Clark.*) You do not know anything to the contrary ?—I know nothing to the contrary.

8603. (*President.*) Have you considered whether it would be advisable to appoint sanitary officers to an army in the field, or even in districts in times of peace ?—I think it would be very desirable.

8604. What do you mean by a sanitary officer ?—I mean a medical officer to select sites for hospitals, to look after drainage, to look after supplies of water, and all matters of that kind; and perhaps to advise on the nature of the duties, and so on.

8605. (*Mr. J. R. Martin.*) On everything relating to the health and comfort of the soldier ?—Yes.

8606. (*President.*) Where would you take such an officer from,—from the medical officers of the Indian army ?—Yes.

8607. Would you make him part of the medical department in the field ?—Yes, but entirely independent of the chief medical officer of the army.

8608. Would they not clash ?—I think their duties might be so defined that they would not clash.

8609. In the case of an army in the field, would you attach him to the quartermaster-general ?—Yes, that would be a very good way, as that department would have to carry out his views.

8610. Do you think that this would not occur, that he might give some advice as to an encampment to the Commander-in Chief of the army, and that the chief medical officers might question his opinion, and give a contrary one ?—I do not think he would do that, it may occur.

8611. (*Sir T. Phillips.*) If that happened, would you over-rule the authority of the man who was answerable for the proper treatment of disease by the opinion of the man who was not answerable for it ?—Any man is liable to a mistake, and the health officer might select bad ground.

8612. Suppose the medical officer, who would have the treatment of the army when sick to attend to, to question the soundness of his judgment, would you still act upon the judgment of the sanitary officer ?—I think so. If the sanitary officer found he had selected bad ground he would immediately correct it.

8613. (*Mr. J. R. Martin.*) You would give the two classes of officers credit for good feeling, and the same desire to forward the military service, that actuates all other officers ?—I think so. We find that our opinions do not receive very much attention as it is, but I think the opinion of a man placed in that position would be much more regarded than our opinions.

8614. He ought to be an officer of rank, character, and trust ?—He ought to be an officer of rank.

8615. (*Sir T. Phillips.*) As to the staff of the regimental hospital, as I understand, each regiment has a hospital ?—Yes.

8616. And to that hospital is usually attached a surgeon, two assistants, an apothecary, a steward, an assistant-apothecary, and steward, and an apprentice ?—It often happens that there is no assistant apothecary and steward; generally there are two apprentices and one or two probationers.

8617. Is there amongst those officers any one entrusted with the payment of money ?—The steward has payments to make; in the field they are sometimes considerable.

8618. For all provisions supplied to the hospital when in the field ?—I am talking of wages to the establishment. When I was in the field I drew 1,500 or 2,000 rupees a month which he had to disburse. He had nothing to do with paying for provisions.

8619. In the field does the steward pay for provisions ?—Never. He pays wages.

8620. The commissariat supplies, and pays for everything required ?—Yes.

8621. How is the hospital clothing provided ?—By the commissariat.

8622. When not in the field does the steward pay anything ?—Never.

8623. Who then pays the wages ?—He pays them.

8624. You do not limit the payments he makes to the field, but the wages of the establishment he pays at all times ?—Yes; certain of them.

8625. He receives from the commissariat moneys to make those payments, he disburses them, and accounts ?—Yes. I am accountable for them.

8626. You would account to the commissariat, and get a discharge by showing that you had made those payments ?—Yes.

8627. Who audits your accounts ?—The commissariat.

8628. (*President.*) Who does the nursing ?—We have a very good establishment for that; they are called ward boys.

8629. Where do they come from ?—We pick them up anywhere; they are camp followers; they are generally low caste men.

8630. Are they chosen from the army ?—Never; they are natives.

8631. What training do you give them ?—They do not require much training, they are generally trained under the apothecary.

8632. Do they all speak English ?—I believe so; they mostly speak broken English, and as the soldiers generally speak a little of their language, they understand each other.

8633. The ward boy understands enough to take the directions of the medical officer ?—Yes. They receive their directions from the subordinate department, and they generally speak the native language very well.

8634. (*Sir T. Phillips.*) How many of these would be assigned to twenty sick people ?—I think we give one ward man for ten.

8635. (*President.*) Have you formed any opinion upon the pay of medical men in the Queen's army, elsewhere, not in India ?—I have. I think the medical department of the Royal army is very indifferently paid. I think that an assistant surgeon in the Royal service cannot keep up his studies nor the appearance of a gentleman under 10*s.* a day, at the very beginning.

8636. Do you think that you get the best men into the Queen's army ?—I think so. The Queen's army contains the very best medical men.

8637. (*Sir T. Phillips.*) Is there any variation of the pay in the same grade in your service ?—None. When a medical officer succeeds to the charge of a regiment, he is better paid than a young officer who is not entitled to that charge; he draws about 16*l.* a month. But unless he gets a charge there is no increase to his pay at any period of his service in the same rank.

8638. (*President.*) Are there different allowances in proportion to age, though no differences of pay ?—Yes. Seniors generally get better appointments, and therefore are better paid; not otherwise, except by promotion to a superior rank.

8639. (*Sir T. Phillips.*) Does the difference in the allowance depend upon the length of the service, or upon appointment to a particular service ?—A medical officer is promoted by length of service; he also succeeds to the charge of a regiment by seniority, that improves his pay.

8640. If he does not succeed to a regiment he does not get additional pay whatever his length of service may have been ?—No.

8641. (*President.*) If a man has been with a regiment for a certain number of years, does he not get additional allowances ?—Not unless he gets the charge of it.

8642. Does he get the medical charge of it on account of his seniority ?—Generally he does.

8643. (*Mr. J. R. Martin.*) Are you aware that in recent orders sent to India to remodel the medical department, Lord Dalhousie recommends that the assistant-surgeon after 7 years service shall have the same rate of allowance when in charge of a regiment that a full surgeon has ?—I have heard so, and I approve of that.

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8644. (*Sir T. Phillips.*) You would make the actual appointment to the particular office, and not length of service the measure of the pay?—Yes; that is the rule.

8645. (*Dr. A. Smith.*) If it become necessary to erect a new barrack in the Bombay presidency, what steps are taken to select the site, and to devise a plan; who are consulted?—There is very often a committee appointed, an engineer officer, a military officer, a medical officer, and perhaps an officer from the quarter-master general's department to select the site.

8646. There is generally a medical officer appointed?—Very often; generally, I think.

8647. (*Mr. J. R. Martin.*) It is a sort of scientific council?—Yes.

8648. (*Dr. A. Smith.*) Who draws out the plan?—I think that is generally submitted by the engineer officer.

8649. (*President.*) The plan is submitted to a committee?—Yes.

8650. (*Dr. A. Smith.*) When you discover anything that is objectionable do you volunteer your opinion or are you required to state whether you approve of it or not?—I never found it otherwise than if I pointed out anything that I considered an improvement, it was immediately listened to. On a committee a man always states his opinion.

8651. Is a committee always appointed to draw up the plan?—I think they generally take into consideration the plan, at the same time they do the site.

The witness withdrew.

Adjourned.

Monday, 13th July 1857.

PRESENT:

The Right Hon. Sidney Herbert, M.P.
A. S. Stafford, Esq., M.P.
Dr. Andrew Smith.
T. Alexander, Esq., C.B.

Sir James Clark, Bart.
J. R. Martin, Esq., F.R.S.
Dr. John Sutherland.

President, The Right Honourable SIDNEY HERBERT, M.P.

George Russell Dartnell, Esq., examined.

George Russell Dartnell, Esq.

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8652. (*President.*) Are you at present on half-pay or full-pay?—On retired half-pay.

8653. What rank do you hold?—Deputy inspector-general of hospitals.

8654. Where have you served?—I have served in India, Ceylon, the Mediterranean, and North America.

8655. Have you formed any opinion with respect to the education of medical officers before being admitted into the service?—I have not given a great deal of attention to the subject.

8656. As to medical treatment, I think you have advocated some modes of dealing with soldiers with a view to the preservation of their health—as to the venereal disease?—Yes, I adopted a plan some years ago in the royal regiment, which I believe has since been adopted in some other corps, and which I found exceedingly effectual, at least in confining the disease within remediable limits, and preventing its after consequences. When I joined the regiment in America in 1839, I found the hospital crowded with cases of venereal disease, both primary and secondary. I found, also, that the practice in the regiment was that every man who went into hospital with a venereal complaint was obliged, when discharged to barracks, to bring up his duty; in fact, he was subjected to punishment. I represented to the commanding officer that this regulation had an injurious tendency, as it made the men conceal their disease. He said he would be happy to alter it, if I suggested another. I recommended that he should give very strict orders that every man, the moment he found himself affected with the most trifling venereal complaint, should report himself at the hospital; that I should report to him, on discharge from hospital, any soldier who I was satisfied had had the disease above three days; and that the man so reported should be sharply punished for disobedience of orders and concealment of his disease. Taking the disease thus in its earliest stage, it was very readily got rid of; and I scarcely ever after had a case of secondary syphilis.

8657. (*Mr. J. R. Martin.*) The early treatment of it, was the sanitary principle which you had in view?—Yes.

8658. (*President.*) When the men found that they were not visited after coming out of the hospital by any extra duty, they no longer concealed the fact of their disease?—No, they soon saw its good effects.

8659.—Was there no compulsory inspection?—No; there was the ordinary health inspection regularly every week.

8660. That is usual?—Yes. Every regimental medical officer is obliged to certify that he has performed this inspection, and has inspected the men for venereal disease. But my idea is, that any man almost who chooses may conceal his complaint in the early stage, even with the most careful inspection. By adopting this plan, I did not inspect the men for the venereal disease at all. I found that I had no necessity for it. Upon making the inspection for the general health, I always said to the men, I look to your honour to come forward if any man has got the venereal complaint, and they invariably did so. I found it to work extremely well.

8661. (*Mr. J. R. Martin.*) Where were you serving at the time?—In America, at Montreal, where there was a great deal of venereal disease.

8662. (*Dr. A. Smith.*) Had you the sanction of the head of the department to get rid of that weekly inspection?—I reported it to the heads of my department at home and abroad. I had the usual inspections for health. But I did not examine a man for venereal. It is a most odious and disgusting operation, and leads to very unpleasant consequences sometimes, and I do not believe that it is effective.

8663. (*Mr. J. R. Martin.*) Is it repugnant to their feelings?—Yes, very much so.

8664. (*President.*) Is there much small-pox in the army?—I believe there is; at Chatham I know there is, from time to time, a good deal of small-pox amongst the recruits and young soldiers.

8665. Is there any re-vaccination?—Not that I am aware of.

8666. Ought there to be?—Yes, I think every recruit, when he joins the service, when he is finally approved and attested, before he is handed over to the commanding officer for drill, should be vaccinated or

re-vaccinated by the surgeon. It would be a very excellent measure.

8667. (*Mr. T. Alexander.*) Is he not always vaccinated if they find no marks?—That is the rule and the practice too, I believe; nearly all the recruits bear marks of vaccination, but that is no proof that a man is protected against small-pox, as nine out of ten amongst those who contract the small-pox bear undeniable marks of vaccination. I would have the operation performed on every recruit, whether he had been previously vaccinated or not.

8668. (*President.*) Are you aware that in the Guards they re-vaccinate all the recruits?—No, I was not aware of it.

8669. What do you propose to do to enforce that regulation?—That every recruit should be re-vaccinated, by a compulsory order from the Commander-in-Chief.

8670. Did you practise that in the regiment that you were in?—No; the force of its necessity struck me while I was at Chatham some months ago.

8671. Could you do it without special medical sanction?—I presume not.

8672. (*Dr. A. Smith.*) Are you aware that an attempt has been made in several corps to do that, but the soldiers have stood up determinedly against it, exhibiting the mark on their arm, and saying that it was subjecting them to an unfair practice to re-vaccinate them?—No, I am not aware of it. I do not think that it would be a valid objection to the practice.

8673. (*President.*) There is no doubt that it is of value to prevent small-pox?—Of very great value, because the mark of vaccination is no certain proof that the constitution is protected from it. Compulsory vaccination takes place with the public, why should there not be compulsory re-vaccination in the army?

8674. You are aware that the mortality in the army at home exceeds that of civil life, being nearly double?—I believe such is the fact.

8675. To what do you attribute the excessive mortality?—I should think, in a great measure, to the want of proper ventilation in barrack rooms, and inattention to other sanitary arrangements.

8676. Do you think that the ventilation is so bad as to produce a sensible effect upon the health of the soldiers?—Yes, I am sure it does at times.

8677. Have you been at night in the barrack rooms?—I have very frequently visited barrack rooms, as well as the between decks of troop ships at night, when the smell and oppression of the air were most offensive and distressing. The wards of hospitals, too, are often close and stifling at night, for soldiers have a propensity to shut up every aperture by which air can be admitted.

8678. (*Mr. J. R. Martin.*) You mentioned the between-decks condition, was it by way of comparison with the barracks on shore?—Yes, in some measure.

8679. (*President.*) Do the men complain of the ventilation?—They complain of anything like draughts of air and do not appear sensible of the absence of ventilation.

8680. Non-commissioned officers and the men who go in in the morning complain of it, do they not?—They do. The sergeant-major of the invalid depôt at Chatham has told me that when he goes to open the door of a full barrack room the first thing in the morning, he always stands on one side to let the "whiff of foul air" pass him; and that he has frequently seen men stagger and hold on by the rail of the verandah as they came out.

8681. Do you attribute at all the ophthalmia in the army to the want of ventilation?—It must have a considerable influence in propagating it.

8682. Have you ever had ophthalmia in your regiment?—Yes, in the royal regiment for nearly two years, in America.

8683. What did you do to get rid of it?—One measure adopted was the encamping of the regiment; the commanding officer, on my suggestion, encamped the regiment for a time, and from the first week of the encampment until the week after the return of the regiment to barracks we had not a single fresh case of ophthalmia.

8684. (*Mr. J. R. Martin.*) It was the means of ventilation that produced so much good?—No doubt chiefly.

8685. (*President.*) When you returned to barracks did it break out again?—Yes, but not in so aggravated a form; the barracks in the interim had been purified and cleansed.

8686. Do you attribute any of the increased mortality to the want of sufficient exercise among the troops?—Yes, and I think if gymnastic exercises, and manly sports and games, were more encouraged, that they would be found a valuable means of improving the health and vigour of the soldier. His only exercise now almost is drill.

8687. Is not that good exercise?—I think too much of it is not.

8688. Why?—It is often harassing to the men from its monotony.

8689. There is very little variety afforded?—Very little variety is afforded; and there is little to develop the muscles, and rouse the nervous energy.

8690. (*Mr. J. R. Martin.*) Besides the absence of mental recreation and cheerfulness?—Yes; it is quite a mechanical sort of exercise, without exhilaration.

8691. (*President.*) Do you attribute the superior healthiness of the cavalry to the greater amount of exercise that they take?—No doubt much of their superior healthiness may be attributed to that. Their drill is much more exciting and less fatiguing, and their stable duties I believe to be very conducive to health.

8692. You are aware that in the French army they consider that dressing their horses twice in a day is a thing advantageous to the health of the men?—I think it is very likely to be so.

8693. You would recommend gymnastic exercises?—Yes; I would recommend games of all kinds to amuse and entertain the men, and to develop their muscles and physical powers.

8694. Have you had a great deal of experience in army hospitals?—Yes, I have been 36 years in the service.

8695. How long were you at Chatham?—The last time, I think, I was at Chatham 17 months as deputy-inspector, and principal medical officer.

8696. Before that time how long were you at Chatham?—I was nearly seven years there before, as a staff surgeon of the first class.

8697. Do you consider that there is more writing imposed upon a medical man than is necessary for the regularity of the service?—The great amount of writing has always been complained of by medical officers.

8698. (*Mr. J. R. Martin.*) Return making and reports?—Yes, and case taking; every case is required to be fully registered, except a case of itch.

8699. Are cases, whether important or unimportant, equally detailed?—They are all detailed, but not equally so.

8700. (*President.*) If you had not that medical register so kept, what record would you have of disease?—I should think it would be sufficient, as in the navy, for the chief medical officer of the hospital to point out the cases that should be detailed, and let them be taken at full length, and with considerable care, and kept as a record.

8701. You must have some record, besides the admission and discharge, of the cause of admission?—Yes, of course, the "admission and discharge book" gives the man's name, age, service, and disease, and you might add the cause of the disease, and where contracted, whether it was the recurrence of a disease or the first attack, and so on.

8702. Is it not necessary for the officer who invalids the troops, who adjudges the rate of pension according to the cause of disability, to refer to this book to show what the original cause of the man's disability was?—It is sometimes useful for this pur-

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pose, but it as often happens as not that the particular information required is not to be found in it.

8703. The admission book would answer that purpose?—It would give nearly all that is required in general.

8704. Could prizes be given for case books; the navy do, do they not?—It might be a very useful way of rewarding a zealous medical officer. In the navy they give a gold medal for the best kept medical register. It is called the "Blane medal."

8705. Were you, when principal medical officer at Chatham, required to refer to the medical registers of regiments, and to decide upon cases?—Frequently.

8706. There you found them useful?—Yes, but in common cases; they could have been done without.

8707. (*Mr. J. R. Martin.*) An admission and discharge register in place of the large case book, in fact?—The register is the case book, it is called the "medical register;" the other is the "admission and discharge register."

8708. (*Sir J. Clark.*) Have you ever been on ship board with a regiment when they have been transported from one place to another?—Yes, frequently.

8709. In what state was the regiment between decks?—In some ships very comfortable, in others quite the reverse. Latterly the ventilation and accommodation in troop ships have been much more attended to than formerly, and they are both much more perfect now than they used to be. I inspected a great many troop ships at Gravesend, when I was quartered at Chatham as a staff surgeon. There is a great difference between the East India Company's ships and the government transport ships.

8710. In what way?—The accommodation in the East India Company's ships is much better, and the provisions superior in every way.

8711. Trading ships, do you mean?—Yes, ships chartered for the conveyance of the troops.

8712. (*President.*) The soldiers on board ship are not berthed in the same way as the seamen are?—Not always, I believe.

8713. Do they give them hammocks?—In all the East India Company's ships they have hammocks. In some of our transports there are standing berths.

8714. Which are the best?—It is difficult to say; some prefer a standing berth and some a hammock.

8715. A hammock is much the best in rough weather to a landsman, is it not?—Yes; the chief objection to a hammock is, that you lie so close to the deck above you.

8716. (*Mr. J. R. Martin.*) The men breathe the consumed air more by being elevated than they would on deck?—Yes, possibly they do.

8717. (*President.*) You have some plan, have you not, for the organization of the medical staff corps?—Yes, I have a plan for the amalgamation of the medical department with the medical corps.

8718. Will you give an outline of it in a few words?—I have here the outline of a plan for improving the social position and status of medical officers of the army, which I beg permission to hand in.

It is as follows:—"The want of some substantive rank and improved social status has long been felt by officers of the medical department of the army, and an available opportunity for obtaining this object in a sufficient degree appears to present itself by effecting an absolute amalgamation of the officers of the department with the newly-formed medical staff corps. This corps, which has been raised for hospital purposes solely, is now an important body of 1,200 men, but very anomalously placed in relation to other sections of the army, from being without officers, except two staff captains at head quarters. This anomaly is much spoken of by the men, who complain that they have no officers whom they can really call their own, or look up to for protection and support. It is true, the warrant directs that they shall be under the control of the principal medical officer when on hospital duty, and under that of the military authority wherever they may be stationed for discipline, &c. Now, as the hospital corps is not an armed one, the men require no drilling except to set them up, to teach them to salute as soldiers, and to march to time in bodies, &c., and this could always be done under the staff captains at the head quarter depôt. Further, discipline under military authority means nothing more than punishment for crime, which could equally well be awarded by medical officers, were they permitted to exercise the privilege themselves, and to hold or assist in courts-martial on their own men. Did the officers of the department belong to the corps, they would naturally feel a much greater interest in it than they now do; the feeling would be reciprocal, and the men would act with more cheerfulness, and submit to their authority with more readiness and respect than they can otherwise be expected to do. To carry out these views, it is suggested that the officers of the medical department be placed in the same relation to the medical staff corps that the officers of the royal engineers are to the corps of sappers and miners (officers and men of this arm of the service have recently been embodied in one corps, "The Royal Engineer,") and that they should take rank from, and be gazetted to, the medical staff corps, under a new set of titles, which would be more plainly indicative of their profession, as well as their relative rank, than the present somewhat unmeaning ones are. For instance, the present titles of inspector, and deputy-inspector-general of hospitals, beside being cumbrously long, designate neither the rank nor the profession; for an inspector or deputy-inspector of hospitals may as well be supposed to be a civilian or a purely military officer as a medical officer. The division of staff surgeons also into first and second class is absurd, leads sometimes to very awkward and unpleasant mistakes, and does not indicate their rank, either relatively to the military officer, or to one another, the one rank of staff surgeon being neutralized by the other. And as to the title of assistant-surgeon, he, having once attained his diploma or degree from a constituted college, is as much a qualified surgeon as the senior inspector-general. It is further suggested, that the amalgamated corps should be styled, under authority, the "Royal Medical Staff Corps;" that the whole of the medical officers of the regular army should be gazetted to it, and that all should wear the same fixed uniform; that there should be no purely regimental officers, as at present, but that those intended for duty with regiments of cavalry, artillery, the line, &c. should be simply attached or posted. Medical officers would thus be more readily available for all the exigencies of the public service than they now are, and in any numbers that particular circumstances might call for, while the difficulty of obtaining leave of absence (so long complained of) might be considerably lessened. The saving to the country, too, would probably be considerable, as it certainly would be to the officers themselves, by relieving them from the heavy expense of frequent changes of uniform, as well as from mess, and band, and other regimental subscriptions. Unity being strength, the foregoing arrangement, it is believed, would give not only greater apparent, but greater real strength and visible importance to the department than it has ever yet had; give an *esprit du corps* to its members which they certainly do not now possess; and entitle them, as a distinct body of considerable magnitude and consequence to the state, to the well-merited designation of a "Scientific Corps."

8719. (*Mr. J. R. Martin.*) It has been complained of, that the present medical designations do not indicate the function performed by the officer?—No, the present titles of medical officers are not in the least understood by the public, and that is one reason why their relative army rank, and proper position in society are so rarely recognized. The titles I propose to substitute for those now in use are on this paper, which I beg leave to hand in.

The same was delivered in and is as follows:

"Titles of Medical Officers.

Present Titles.	Proposed Titles.
Director-General - -	Surgeon-General-in Chief
Inspector-General of hospitals - -	Surgeon-General.
Deputy-Inspector-General Hospitals - -	Surgeon-Brigadier.
Staff-Surgeon, first class -	Surgeon-Lt.-Colonel.
Staff-Surgeon, second class and regimental surgeon -	Surgeon-Major.
Assistant-surgeon (above five years service) - -	Surgeon-Captain.
Assistant-surgeon (under five years service) -	Surgeon-Lieutenant.

"The above proposed titles, it will be perceived, designate at once the relative rank and the profession, without the chance of mistake, or the necessity for explanation, while the present titles are in general wholly misunderstood by the public. It will also be perceived that the proposed titles give a step of relative rank throughout, which has been long looked for, and which, I think, will hardly be withheld if there be an intention of improving the position of the medical officers of the army. If the relative rank of captain be conceded to the assistant-surgeon after five or six years' service, that of major will hardly be denied to the full surgeon, whose position, especially as chief medical officer of a regiment, is one of considerable importance and responsibility, second only to that of the commanding officer. If deemed advisable, however, the surgeon-major (if promoted early), might during the first three years, have the brevet rank only, convertible into substantive at the end of that time.

"The foregoing proposed titles are nearly, if not precisely, the same as those given to the medical officers of the United States Army, and which are believed to give general satisfaction."

8720. You have a proposal to make, have you not, as to retirement?—I have drawn up on this paper a scale for the full pay of medical officers, which, with permission of the Commissioners I beg to hand in.

The same was handed in, and is as follows:—

"Full-Pay.—Proposed Scale.

	£	s.	d.	
Surgeon-General-in-Chief -				per annum.
Surgeon-General - -	2	10	0	per diem.
Surgeon-Brigadier -	1	15	0	do.
Surgeon, Lieut.-Colonel -	1	8	0	do.
Surgeon-Major - -	1	2	6	do.
Surgeon-Captain - -	0	15	0	do.
Surgeon-Lieutenant - -	0	10	0	do.

"These rates of pay, with an earlier right to retire and a more liberal retiring allowance than at present, together with increased rank and improved social position, &c., would, it is believed, be sufficient to attract the most talented and highly educated young man into the ranks of the department."

8721. At what ages do you propose that officers should retire?—After 20 or 21, 25 and 30 years.

8722. Twenty-one years, in the case of a man who enters the service at 25, would bring him to 46. Has not a man still a number of years of good service left in him?—Yes.

8723. Then why retire him at that time?—I would not do so compulsorily.

8724. Why permit him to retire from the service, when he has acquired a good deal of experience, instead of giving it to the service?—Military officers (at least a certain number annually) are permitted, after 21 years' service, to retire on full pay.

8725. They are permitted to go on half-pay, after 21 years; but I presume you contemplate, by retirement, something larger than half-pay?—Yes, a retired allowance; it seems to be the general wish; I do not myself think it would be of any great use, that permission should be given them to retire at this period of service. I would not recommend it.

8726. (*Mr. R. Martin.*) That would be the usual principle with officers who were incompetent from sickness?—Yes.

8727. (*President.*) Is it not wished very much on the ground, that at that age they would be more likely to get into private practice?—Yes; and as a means of inducing a better class of young men to enter the service.

8728. (*Mr. T. Alexander.*) Would many take advantage of it?—I do not think that many would.

8729. (*President.*) Do you propose compulsory retirement at a more advanced age?—I do not think that it should be compulsory; it might be left to the consideration of the government to compel an officer to retire after 30 years' service, if he was found to be incompetent for it; but it might be injudicious to compel a man to retire, after 30 years, when he was perhaps most efficient in his duties, and it might be a hardship to the individual.

8730. Do you not think that things of that kind are better governed by some regulation; you take the the chance, every now and then, of losing an efficient man; but the government could hardly exercise so invidious a power, as telling one man that he was competent, and another that he was not?—Very true; but a man might be of sound constitution at that period of service, and might be too valuable to lose.

8731. Take him at 35 years' service, and 60 years of age?—Then, I think he ought to go.

8732. Would you give any additional rank upon retirement?—I think in some cases it would be desirable, but the present rank is so little known to the public that it is of comparatively little value as an honorary title.

8733. Would not any rank be comparatively little known to the public; the designation of the medical officer is Dr. So-and-so; people do not ask whether he is a deputy inspector?—If such ranks or titles as I have proposed were given they would be better understood by the public, and appreciated.

8734. It will not be known as a prefix to his name?—I do not see why it should not be.

8735. (*Mr. J. R. Martin.*) It would then become a habit so to designate him?—Yes; the prefix of staff-surgeon and surgeon-major—titles now in use—do not sound ill, neither would those of surgeon-general, surgeon-lieutenant-colonel, &c.

8736. (*President.*) As to half-pay, have you any proposal to make?—I have drawn up a scale here which I will hand in to the Commissioners.

The same was delivered in, and is as follows:—

"Half-Pay.—Proposed Scale.

Ranks.	After a Service of					
	20 yrs.		25 yrs.		30 yrs.	
	s.	d.	s.	d.	s.	d.
Surgeon-General-in-Chief - -	—		—		—	
Surgeon-General - - -	—		30	0	40	0
Surgeon-Brigadier - -	18	0	25	0	30	0
Surgeon-Lieut.-Colonel - - -	14	0	20	0	25	0
Surgeon-Major - - -	12	6	15	0	17	6
Surgeon-Captain - - -	5	6	6	6	10	0

An additional shilling or two shillings a day might be given to officers of each rank if placed on half-pay by reduction of establishments. Every officer of the corps should have the unqualified (optional) right to retire on the authorized half-pay of his rank after a service on full-pay of 20 years. After 30 years' service there should be no increase of either full or

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half-pay, but the latter should be so liberal, and the difference between the two so trifling, as to leave little inducement to an officer to continue longer on the active list. His retirement, however, on the completion of this period of service should not be compulsory, as such a rule might be unjust to the individual, or prejudicial to the service, but at the same time that it were competent to the government to permit an officer to serve a further period, if his services as a public servant were considered valuable; it should also be competent to the authorities, if deemed advisable, to place him on the retired list."

8737. Altering the present scale materially?—Increasing it rather.

8738. Do you make it bear any fixed proportion to the full-pay?—It is proportioned to the length of service.

8739. You do not take so many fifths or three-fourths?—I have taken it from other calculations, as a sort of mean.

8740. Upon what grounds do you augment the half-pay?—I think that it is generally felt by the department that the present half-pay retirement is insufficient for past services, or as an inducement to retire.

8741. You are speaking of it with regard to officers going on it permanently?—Yes, not temporary half-pay.

8742. Do you propose in your scheme to retain the rank of first-class staff-surgeon, or to alter its duties?—I should retain the rank, make it an administrative office, and change the title from staff surgeon of the first class, to surgeon lieutenant-colonel.

8743. What do you conceive it to be now, executive or administrative?—It is sometimes one and sometimes the other.

8744. What was it intended to be when first established?—I understand that it was intended to be executive, I think it ought to be administrative.

8745. Therefore you would have three administrative ranks to administer two executive ranks?—Yes, then the number of staff-surgeons of the first class might be reduced to a sufficient number to act as principal medical officers of small stations where you could not place a deputy inspector.

8746. There are not above 34 or 35 now?—I think not.

8747. Would you reduce them below that number? I cannot say whether it would be necessary or not.

8748. If you reduce them much lower than that, how will the director-general be able to select men for the rank of deputy-inspector; his field would be so narrow that it would be impossible for him to make a selection?—Yes, but I would not reduce them lower.

8749. You have a strong opinion in favour of the retention of the rank of first-class staff-surgeon?—Yes.

8750. You think that it ought not to be abolished?—Yes, I do.

8751. You think it is necessary as an administrative rank?—Yes, I do.

8752. Do you think that when changes are made in the organization of hospitals, by which the medical officer would be relieved of an immense deal of drudgery which now falls upon him, and which ought to be done by the steward, that you would still require so large a proportion of administrative officers as you do now?—I am not prepared to answer that question, as I know not what changes may be in contemplation.

8753. (*Mr. J. R. Martin.*) Would not the deputy-inspector answer all the purposes of a staff-surgeon of the first class?—Yes, of course he would.

8754. The number in any case is not very large, according to your statement?—No, it is not.

8755. (*President.*) Have you put in, with those rates of half-pay, any rates of full-pay?—I have.

8756. You do not know whether they agree with the rates which are mentioned in the Appendix to Mr. Stafford's committee?—I do not know. I have taken them as a sort of mean between the suggestions of others, and the present rates.

8757. You have taken them arbitrarily?—Yes, in some measure.

8758. Do you make larger increases to the upper or lower ranks,—where is the largest increase?—I think in the lower ranks, a proportionate increase in all.

8759. What do you give to an assistant-surgeon on joining?—Ten shillings a day.

8760. Will you state what is the present system of promotion from the rank of assistant-surgeon to surgeon?—Really I cannot say what the rule is.

8761. It is by seniority, is it not?—I believe so, but I really cannot tell.

8762. (*Mr. J. R. Martin.*) Have you any means of knowing whether that rule is departed from?—I have known men promoted over the heads of seniors. I do not know what the rule is.

8763. (*President.*) Are those the cases of men who were senior in certain stations and not senior on the army list?—I am not prepared to say.

8764. There is no warrant, is there, fixing the rule of promotion?—Not that I am aware of.

8765. There are no published regulations?—No, I am not aware of any.

8766. How do you consider that the promotion ought to be regulated from assistant-surgeon to surgeon?—I think it ought to be regulated by seniority.

8767. Do you mean seniority within certain districts, or seniority in the army list?—I think the facilities of communication are now so great that it might be regulated upon general seniority.

8768. If not carried so far as that, a very simple division, say east and west of the Cape, would be sufficient?—Yes, sections of command,—not individual commands, but large sections of command.

8769. Would you propose that the same rule should obtain from the rank of surgeon to first class staff surgeon as to seniority?—I think that, perhaps, might be a case for selection under proper regulation.

8770. Would you say the same as to selection to a deputy-inspectorship?—I think probably after that the promotion might go by seniority again.

8771. The only grade in which you would have selection would be, from surgeon to first-class staff surgeon?—Yes.

8772. If a man utterly failed in his administration when tried, you would not on that account leave him in his rank, but you would equally promote him?—Yes, when it came to his turn.

8773. Do you think that that acts as a wholesome stimulant in the rank?—I do not know that it does; but there might be other means of promoting an officer who distinguished himself,—by brevet rank, for instance,—by that means you would get the best men to the top of the list.

8774. (*Dr. A. Smith.*) If a man utterly failed after he was appointed to the first administrative rank, would you consider yourself justified in passing him over?—Yes, if he was inefficient, certainly.

8775. (*Mr. J. R. Martin.*) That would be not only justifiable but necessary?—Yes, unquestionably.

8776. (*President.*) You have said that you would not object to selection under proper regulation, what do you mean by that?—On fair and sufficient grounds being shown to the Commander-in-Chief for the superior claim of the man to be promoted.

8777. Like the warrant in which the Commander-in-Chief specifies the reasons for promoting a colonel to be a general; you would have the reasons always stated?—Yes, and the names of those given who were to be passed over, and why they were passed over.

8778. (*Mr. J. R. Martin.*) If reasons should be so stated publicly, you think it would do away with much of the discontent and misunderstanding which now exists?—Yes, I should think it would.

8779. (*President.*) There is a very little selection practically in the upper ranks, as the seniors, on the whole, get the best share of promotion?—I think they do.

8780. In the lower ranks you think it more doubtful?—I really am not prepared to say.

8781. (*Dr. A. Smith.*) You do not mean to say that you would make public the reasons why men are passed over and let the whole world know them?—I did not mean that. I meant that the names and claims of both parties should be fairly submitted to the Commander-in-Chief; and that the reasons why a man was promoted much out of his turn might be made public.

8782. To the whole world?—I should think so.

8783. (*Mr. A. S. Stafford.*) That would be analogous to the arrangement as to combatant officers?—Something upon the same principle, the grounds upon which it is done should be stated; I do not mean that the reasons for passing over a man should be made public; I might have said so, but I did not mean it.

8784. (*President.*) Will you explain exactly what you propose to do?—If an officer is proposed to be promoted out of his turn over another, I think that fair and sufficient reasons should be given for that promotion.

8785. To whom?—To the Commander-in Chief; the names of those who are passed over should also be given to him.

8786. Do you propose afterwards to publish in any way, the reason why the promotion is made?—Not in simple selection for the first administrative rank; but in the case of an officer meriting special reward in the shape of promotion, the Gazette might state, in the same way that it does in the case of military officers, —"For distinguished conduct."

8787. But take the case of the navy, where selection is the rule, without reference to distinguished conduct; they select the men that they think most capable, but no reasons are publicly stated; those selections would have a certain analogy to them, would they not?—The cases for selection would; but the others, as a safeguard, should, I think, be in some way made public.

8788. Take the rank where you propose that the order of promotion should go by seniority, that of assistant-surgeon to surgeon, yet, for very special services in the field, you would, I suppose, allow exceptional cases?—Certainly, such special services should of course be rewarded.

8789. In those cases, you would have the reasons stated publicly?—Yes, I think so.

8790. Do you believe that if the rules were published much dissatisfaction in the profession would be removed, as they would then know under what system promotion was taking place?—Yes, I am sure it would be very satisfactory to the department.

8791. Do you think that brevet rank could be given as a temporary reward?—Yes, I think it might be very well given.

8792. Is local rank ever given?—Yes, local rank is given to nearly all inspector-generals.

8793. The local rank of inspector?—Yes; nearly all our inspector-generals have local rank. When first appointed to a station, they get the local rank only, in which they serve for three or five years; it is then made substantive, and they retire. It is only confirmed on retirement.

8794. What is the length of service of the deputy-inspector before he gets that, three years?—Generally three years, often much longer.

8795. At the expiration of that period he loses his station, does he?—He loses his station if promoted.

8796. And gets the local step of rank confirmed?—Yes, if he gets the local rank of inspector-general, he is moved to another station.

8797. You say the local rank of inspector-general? Yes, I say the deputy inspector general gets the local rank of inspector-general, and is removed to another station.

8798. To a higher station?—Yes.

8799. When they are moved to another station with the local rank of inspector-general, do they get the pay and allowances of an inspector-general?—Yes, upon that station only.

8800. But the rank is not made substantive before the expiration of a further period?—The third year abroad, the fifth year at home, and then they retire from the service.

8801. In the cases of reduction upon the termination of war, and restoration to full pay, does that go by seniority?—Reduction from full to half-pay should commence with the junior.

8802. But not the junior of each rank?—Yes, the junior of each rank.

8803. Without reference to his whole service?—I think so.

8804. With regard to restoration, how is that done?—I have no idea how it is done; but I think that every officer reduced should be restored to full pay as he had formerly stood on the list, commencing with the senior.

8805. In the rank or upon the whole service?—The senior in the rank.

8806. But the practice is to take the senior in the service, is it not?—I really cannot tell you.

8807. Have you known it done in both ways?—I cannot say.

8808. Do you hold that in all cases seniority should count by the senior within the rank, and not the senior from the first entry?—In promotion as well as restoration seniority I think, should count within the rank.

8809. Except when you come to retirement?—Yes, that I should count by length of service.

8810. Upon the ground that age operates upon all ages equally the same?—Yes.

8811. In case of a man being selected for merit and being promoted to a higher rank, do not you think that it operates unjustly on him to count his seniority not by his rank, but from his entrance into the service?—Yes; I think it does.

8812. In that way, you would say that all seniority should count within the rank in which the officer is?—Yes; I think so.

8813. Have you any opinion to offer on the subject of the turn of foreign service?—No; I have not given it much consideration.

8814. With regard to the publication of the roster?—No; I have not thought of it.

8815. You have been for some time deputy-inspector, and you have had a charge with inspectorial rank?—Yes, since November 1854.

8816. At Chatham, and formerly at Yarmouth?—At Chatham, and previously at Plymouth; my rank when at Yarmouth was that of staff-surgeon of the first-class.

8817. Did you make confidential reports?—From Chatham I did.

8818. (*Mr. A. S. Stafford.*) How often?—I was required to make confidential reports fortnightly; and, latterly I believe I did; but not always from pressure of duty.

8819. Were those reports upon the comparative abilities of the officers, or were they merely confined to any derelictions of duty or neglect?—They refered to their general capability, their general acquirements, attention, and so forth, the manner in which they performed their duties, and their moral character; my reports were confined to the junior officers.

8820. Had you any occasion to make reports against an individual for misconduct?—On two or three occasions only.

8821. (*M. J. R. Martin.*) Were you precluded by order from reporting upon a senior officer?—No; but the director-general was good enough not to press me on the subject.

8822. (*President.*) Did you when you made a report unfavourable to a man's character, not as to his abilities, but as to some dereliction of duty, communicate it to him?—Yes, invariably.

8823. Do you think that it ought always to be so communicated?—Yes, I do.

8824. By the officer who makes it?—Yes, by the officer who makes it.

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8825. Has he then an opportunity of offering an explanation which goes up with your report?—Yes, certainly.

8826. It is not the practice now?—I do not know.

8827. He would have no means of making an explanation of his conduct to the director-general, unless the director-general communicated the report to him?—He could of course only know of his misconduct being so reported from one or other of the two sources.

8828. Do you think that confidential reports are necessary?—I think that they ought to be very valuable documents.

8829. (*Dr. A. Smith.*) So far as you know, is it not the practice, when an unfavourable report is made to the director-general, for him either to address a letter to the person complained of, or to write to the principal medical officer to say something to him?—I believe it is; but I have had no experience except in my own practice.

8830. But in the cases that you have referred to from Chatham, supposing that you did make reports did you receive no communication from me on the subject?—Yes; I know that I did.

8831. (*President.*) To what effect?—Requiring further explanation, I believe.

8832. (*Dr. A. Smith.*) Or to admonish him, or something to that effect?—Yes, in one case certainly.

8833. (*President.*) Desiring you to admonish the officer about whom the report was made?—Yes.

8834. Do you think it necessary for the conduct of the department that the director-general should be informed of the relative merits of the officers serving in the department?—Yes, I think he ought.

8835. At the same time you think that as an invariable rule any unfavourable report ought to be communicated to the officer who was affected by it?—I think so. It would be only fair and honourable.

8836. (*Mr. A. S. Stafford.*) Have you anything to alter or modify in the evidence which you gave before the army medical department committee in 1856?—No, I do not think I have.

8837. (*Mr. J. R. Martin.*) Do you think that something in the form of a good service pension ought to be given to meritorious officers in your department?—I think it would be a very great boon, and be very useful as a stimulus to exertion, as well as a graceful reward for faithful and meritorious service.

8838. Do you think that something analogous to the honorary distinction of aide-de-camp to the Queen might be conferred upon the surgeons in the army?—Yes; I think such an honorary title as "surgeon aide-de-camp to the Queen" would be very highly prized, and be a means of elevating the social position and importance of the military medical officer.

8839. (*Mr. T. Alexander.*) Do you think that the title of honorary surgeon or honorary physician to the Queen would not do equally well?—Yes, I suppose it would, but the other would better imply a military medical officer, and accord with the other titles I have proposed.

8840. (*President.*) Do you think that sufficient attention is paid to sanitary measures at present in the army?—I do not think there is sufficient attention paid to the subject.

8841. Would you recommend any change in that respect?—I would strongly recommend the appointment of local sanitary boards or committees in every large garrison and camp, with a central board in London to communicate with, and receive instructions from.

8842. (*President.*) As a part of the director-general's office?—Yes.

8843. How would you compose a board in the particular county?—The board in the country should be composed of two medical officers, an engineer officer, if possible, and perhaps a military officer.

8844. Who should examine into the whole locality?—Their duty should be to examine into everything connected with the hygiene, and sanitary condition of the station. The drainage, and state of ventilation of the barracks and hospitals; and to inquire into the causes of any particular local sickness or epidemic. They should also be invested with authority to call for plans of buildings and drainage, &c.

8845. Have you found that medical officers offering suggestions upon sanitary points are readily listened to by the officer in command?—In some cases they are, and in some cases they are not; a good deal depends upon the character of both officers.

8846. (*Mr. J. R. Martin.*) It depends upon chance, in fact?—Yes; commanding officers are often very slow in listening to anything of the kind.

8847. (*President.*) Should it be made a matter of regulation that the medical officer should be consulted, and that he should give his opinion in writing?—I think it very desirable that more importance should be attached to the opinion of medical officers in this respect; and in large garrisons and stations the formation of sanitary committees would, I am sure, be exceedingly useful.

8848. (*Mr. J. R. Martin.*) It has been suggested to the commissioners, that an individual officer of health should be attached for the sanitary service of the army in peace, and in war would that answer the object which you have in view in place of a board—a highly qualified medical officer?—Yes; I suppose it would at head quarters.

8849. For field service suppose he were attached to the quarter-master general's department, one person would suit best there?—Yes; probably, he would.

8850. (*Dr. A. Smith.*) Do you consider, if such an appointment was made of a principal sanitary officer for the whole army, that that officer would not be getting into constant collisions with the principal medical officer, the one being totally independent of the other?—It might be the case certainly, but with a committee, such as I have proposed, it could not well happen; the principal medical officer might, perhaps, act as president of the board.

8851. Do you think that a sanitary officer attached to the army would ever do much good if he was entirely independent of the principal medical officer of the army?—I think that they would be very likely to come into collision, if the one was entirely independent of the other.

8852. (*Mr. J. R. Martin.*) That would not happen if he reported to the principal medical officer, and co-operated with him for the good of the service?—If such an officer were appointed, he should not be independent of the principal medical officer; better, perhaps, attach him to this department, than to the quarter-master general's.

The witness withdrew.

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HENRY MORTIMER ROWDON, Esq., examined.

8853. (*President.*) In what capacity did you serve at Scutari?—As civil surgeon.

8854. From whom did you receive that appointment?—From the Secretary of State for war, on the nomination of the director-general.

8855. What position had you previously held in the medical profession?—I had been lecturer on anatomy, at the Middlesex hospital, for nine years; and a member of the Weekly Medical committee of that hospital, for six years; I had also been engaged in private practice, in London, for 15 years.

8856. In what military hospital in the East did you do duty, and from what dates?—In the barrack hospital, at Scutari, from March 28, 1855, to February 1, 1856.

8857. What was the nature of the duties that you had to perform there?—I had the entire charge of an average number of 100 beds; and by order of the director-general, I was subject to no other supervision than that of the inspector-general, the principal medical officer of the station. By the authority also of the director-general, an acting assistant-surgeon and an hospital dresser were placed under my direction, to carry out the proper attendance on the sick.

8858. How did such a novel expedient work in with the usual routine of the hospital?—Very simply and effectively. The barrack hospital consisted of four divisions, each division containing about 400 beds; in every division there was a separate administrative officer, namely, a first-class staff surgeon, and several executive officers, comprising, however, but *one* second-class staff surgeon, and a number of junior medical officers, the large majority of whom were acting assistant-surgeons, and hospital dressers. Above the first-class staff surgeons was the deputy inspector-general, and above him the inspector-general, who was the principal medical officer of the station. I was appointed to duty in the fourth division, a section of which, containing about 100 beds, was allotted to my entire charge and responsibility. The first-class staff surgeon of that division had nothing further to do with my wards than to send in patients, and discharge them when convalescent, according to the usual rules of the service.

8859. From the opportunities for observation which you then had, did you consider the system of administration, and the general efficiency of the department, equal to what were required or expected?—No; I thought that there were very many defects; my evidence in explanation of that belief, may be referred to three principal heads, namely:—first, the general administration of the department; secondly, the distribution of professional duties among army surgeons; thirdly, the want of sufficient control and authority of the executive officers. The administration of the business of the hospital appeared to me to be greatly impeded, by the want of proper representation to the principal medical officer, by the executive medical officers, of the condition of the wards, and the wants of the patients.

8860. On what grounds did you form that opinion?—From the fact, that on my taking charge of the wards assigned to me I found a great deficiency of proper bedsteads, bedding, clothing, medicines, and other necessaries. All those articles were in the stores of the same building; and when I expressed to the acting assistant-surgeon, and dresser, previously in attendance upon the sick men, my surprise that they had not sooner obtained the different articles referred to, they told me that requisitions for them had been previously made, but without effect.

8861. What do you consider to have been the cause why those requisitions were not attended to?—The acting assistant-surgeon was a very young man, who had passed the College of Surgeons only just before his appointment to duty at Scutari, and the dresser had passed no examination whatever, not having nearly completed his medical education. As there was only one executive officer of higher rank throughout the whole division, these young gentlemen had treated the sick and prescribed for them conjointly for some time before my arrival: I concluded that they had not been considered sufficient authorities as to the necessity of the things applied for. It was, moreover, required by the rules of the service that requisitions made by any executive officer should be approved and countersigned by the first-class staff surgeon, though the latter, from not being in personal attendance upon the sick could hardly judge so well as to their necessity. In the event of any obstacle occurring through the circuitous form required, such as the absence of the first-class staff surgeon, or the document not passing through the proper channel, a great deal of confusion and suffering were occasioned. The executive officers had no power to make known their wants to the principal medical officer; in fact, they were expressly forbidden to do so by an order that appeared in the departmental Order Book.

8862. Do you consider that that rule of the service was a useful or necessary one?—No; I believe that it operated practically as a discouragement to the medical officers in charge of wards from making known many facts that it was of the highest importance the principal medical officer should have been acquainted with, at the same time without securing any advantage either as to economy or convenience. But what was of still greater consequence, it acted obviously to the disadvantage of the sick men.

8863. Do you consider then that the present practice in regard to requisitions, reports, &c., might be simplified with benefit both to the service and the sick?—Yes, I consider that the executive officer in charge of wards should be responsible in his own department, and should possess the power to meet emergencies as they arise; for the judgment and discretion with which that power is exercised, he should be responsible to the principal medical officer. I also consider that the regulations of the service should not only permit but encourage direct communication between all executive officers and the principal medical officer, so that by providing for explicit representation to him, the ultimate responsibility should be limited as much as possible to the principal medical officer. This change would, however, require for its successful adoption other concurrent changes, to insure increased efficiency and professional ability on the part of all junior medical officers.

8864. Can you mention any facts to bear out the opinion which you have stated?—Yes; I am supported by the fact, that the very great deficiencies which existed in my wards when I took charge, were immediately remedied, to the great benefit of the sick, by the direct communication which I, as a civilian, was permitted to make to the principal medical officer, and by the power with which, as an independent executive officer, I was enabled by the directions of the director-general to give full effect to my opinion on professional and sanitary matters, without any interference, or any other supervision than that of the principal medical officer.

8865. Can you state any facts that occurred during your subsequent service in the barrack hospital to show the disadvantage to the soldiers, and to the service, of the present system, in the management of army hospitals?—Yes, especially in regard to the ill effects of withholding certain facilities from the executive army surgeons which were conceded to civilians. In my monthly report for July 1855, which I had the privilege of sending direct to the inspector-general, I felt it my duty to add a special letter (a copy of which I beg permission to hand in), calling his attention to the large numbers of broken windows in my wards, after repeated requisitions had been made for their repair. Many of the men had suffered severely from the cold and wet at night, blowing directly upon the heads of their beds, several beds having a window without a single pane of glass in it, within a few inches on either side of the bed. Although I had frequently shifted the men who suffered to other beds, the men newly exposed suffered in the same way. This will be more readily understood when I state that those patients were admitted into the hospital with rheumatism, ague, dysentery, pleurisy, pneumonia, &c. The stay of those patients in the hospital, at the time, too, when by all accounts they were much wanted at the front, was greatly prolonged by the exposure to which I have referred, and apparently on the ground of an expense not exceeding half the daily cost of the men so detained in the hospital. I therefore felt it my duty to represent the matter as emphatically as I could to the notice of the inspector-general, the result was that the inspector-general visited my wards in person, and, having ascertained by the condition of the men that my complaint was well-founded, the necessary directions were given, and within three days all the

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windows were mended, to the infinite relief of the men. The state of the windows over the whole hospital was, however, pretty much the same: some better than in my wards, and some infinitely worse. Those in my wards were the only ones that were mended, even under the palpable evidence of the same want of repair. I was therefore forced to the conclusion that none of the executive army surgeons would have been allowed the same immunity in making the earnest representations that I had found imperative, or whose persistance even in such a matter of duty, would have been otherwise than to their disadvantage.

8866. Upon whom were the requisitions made which failed to obtain things before you applied directly to the principal medical officer?—To the purveyor, and they should have been forwarded by the purveyor to the engineer.

8867. Upon what grounds did he refuse them?—It would be hard for me to say what his reasons were; my belief was that the matter could not have been thoroughly brought to the notice of the principal medical officer, and without his express approval such requisitions would not be attended to.

8868. Also there was the difficulty that the requisitions required the counter-signature of the administrative officer?—Of the intermediate administrative officers, which were not in all cases given; it frequently happening that they were absent or ill or in passing through a number of upper grades before reaching that of principal medical officer, they were to a certain degree qualified or burked, so that they did not ultimately take effect.

8869. Can you state any further facts to show that the control of the intermediate administrative officers, that is, the first class staff surgeons, over those engaged in the actual treatment of disease, is prejudicial to the sick, and opposed to the true interests of the army medical department as a service?—Yes; the first-class staff surgeon of the division to which my wards belonged, among other regulations issued orders to the ward masters and orderlies to wash and scrub the floors of the wards on three fixed days in the week, and all the other woodwork on the alternate days, without reference to the opinion of the surgeon in attendance, to the nature of the cases in the wards, or to the state of the weather. My attention was first drawn to the subject on the day this washing commenced by finding the floor round the beds of the sick men perfectly wet at 8 o'clock p.m., when I paid my evening visit. A single glance at the nature of the cases might have convinced any one who really cared about the result of the medical treatment, that such a proceeding was most injurious to the patients. The unfavourable effects of washing the floors of wards containing sick men in bed, and the damp engendered by the slow process of drying where there no fires, especially in cases of fevers, rheumatism, erysipelas, and pulmonary diseases, are well known to all experienced medical officers. The practice is, moreover, expressly forbidden by the War Office regulations of 1854, page 24, article 50; I therefore wrote an official letter to the inspector-general (dated September 13, 1855), pointing out the ill consequences on some particular men, and requesting his further instructions on the subject. He at once concurred in the inexpediency of the practice, and it was discontinued in my wards only. The executive medical officers in the other wards of the division did not possess the same powers of appealing, without prejudice to themselves, to the principal medical officer, and they were by the same fact relieved from the responsibility which attached to the proceeding. I should state that from first to last no similar regulations were made in the three other divisions.

8870. Similar to what?—As to washing the wards. To express further my honest opinion on these matters, I must say that as far as my own observation extended, it always appeared to me that more care and anxiety were shown to exhibit a clean outside that to secure the most skilful treatment of disease, or the most successful sanitary conditions. Even in regard to the inspections which I witnessed, with but a single exception, less examinations were made of the diseases in the ward, of the length of stay of men in hospital, and of the result of treatment in leading to recovery or the reverse, than of comparatively unimportant matters of routine.

8871. You have given it rather to be inferred by your answers to the previous questions that medical officers had abstained from representing the wants of their wards in the manner that you did, from the fear that a proceeding of the kind on their part would have operated injuriously to them?—Yes.

8872. In what way would it have operated injuriously?—I could give one very distinct instance of the ill effects which did follow where such representations were made, if the Commission wish. It relates personally to myself. I beg that it may be distinctly understood, that I do not refer to it in any shape as a grievance, but I simply speak of it as a matter of fact, in answer to your questions. I was employed at the barrack hospital from the 28th of March 1855 to the 31st of January, or the 1st of February, 1856. During the whole of that time (and I speak of it now as a matter of fact, not claiming any merit for simply doing my duty) I never slept out of the hospital, neither did I omit one single visit, morning and evening, throughout the whole time of my service there. I fortunately never had an hour's illness, and I never applied for an hour's leave of absence, and no complaint was ever made of the way in which I performed my duties there. On the contrary, I had frequent expressions of thanks on the part of the principal medical officer latterly in charge there of the manner in which I performed my duties. When instructions were sent out to the commandant of the station that five of the civil surgeons might be relieved from duty, one of the five so selected was myself, who was well known from good health and other reasons to have never been absent from my post at the time of duty; it was also well known that of those who were left behind, that is to say, civil surgeons, one had been incapacitated for a period of eight consecutive months from illness, and who at that time was not attached to any duty, I being actually in charge and in daily attendance on upwards of 100 men; yet I was withdrawn from the service, and, if I had so regarded it, subjected to the consequent discouragement and loss of pay; but I did not so regard it. I speak it now simply as a matter of fact, and not as any hardship. But on my return to England (and the Director-General will, I have no doubt, permit me to state what took place) I naturally was anxious to obtain from him an expression of his approval of the way in which I had performed my duties, and which I trusted had been made known to himself. The Director-General, although extremely courteous to me on the occasion, distinctly withheld from me a single expression of thanks, for that reports had reached him of the trouble that I had given, and which I concluded was the trouble of having honestly and to the best of my ability done my duty in making representations which were proved to be for the benefit of the sick men, and Dr. Smith distinctly declined to give me any expression of his approval of the way in which I did my duties. Without troubling yourself or the members of this Commission with any further statement, I did think, from the very fact, which nobody could call in question, of my never having been absent from my post from any cause, and never having slept out of the hospital, that I was entitled to such approval for the way in which I did my duty. Without regarding it as a grievance to myself, I did feel that if such a system was taking effect in the army, it must be greatly to the disparagement of the medical officers, and to the infinite damage of the sick soldiers.

8873. You are arguing now from a single instance in which you must guess at the motive; did you ever know other cases, or did you see any alarm on the part of the junior army medical officers, that if they

made those representations as to their patients it would be held that they had been troublesome and making difficulties?—Yes, I did. It was most unequivocally expressed on their parts; it was not done in so many words, but when I frequently said, "How is it that you do not represent these things?" a shrug of the shoulders implied, more strongly than any words that they could have used, the real causes operating in their minds.

8874. (*Mr. J. R. Martin.*) Their dread of being considered troublesome men?—Yes, the remark of being troublesome was applied to me repeatedly by the Inspector-General, though my letters to him, which must be extant, were couched in the most courteous terms I could use.

8875. (*Dr. A. Smith.*) You have made some reference to my having refused you a certain document which you particularly desired. I do not exactly recollect the circumstances of that refusal; will you state a few circumstances connected with that interview, so as to enable me exactly to recollect what was the object of the interview, and what was the reply that I did give you?—I did not ask for any document, but simply for the verbal expression of your approval, that you declined to give me; it was a very short interview. I called at your office; you were standing at your desk. I called to report myself, and to state that I was ready to return to my own duties in London. I simply expressed my hope that you were satisfied with the way in which I had performed my duties, and you distinctly said, "No sir, I cannot say that I am, for "reports have reached me stating that you have "given a great deal of trouble, and if it is any docu-"ment or any paper that you wish me to sign I shall "decline it." On hearing that, I expressed to you, that I was sorry to find that I had not been fairly represented to you. I further said that I had no doubt that if I had been indifferent to the wants of the sick, and only consulted my own pleasure by dining over at Pera every other day, and, as in a case in point, in getting tipsy every other day in the week, I should have been considered a very good fellow, and would have been left to the enjoyment of my appointment as long as I could have it; but because I had done otherwise, because I had done my duty, and endeavoured to induce those under me to do theirs, I had been held up to you as having been troublesome.

8876. (*Sir J. Clark.*) You are aware that your evidence is being taken down? Do you adhere to your statement as to tipsyness?—Yes, I am quite clear as to that.

8877. (*Dr. A. Smith.*) Do you mean to say that I said to you, "If it is any document or any paper that you wish me to sign I will not do it;" I did not volunteer that observation, did I?—Yes. You said that in reply to the expression of hope on my part that you were satisfied with the way in which I had done my duty; you said, No, you were not satisfied.

8878. Did I say directly to you, without your having asked me to give you some document, "If you "want me to sign any document or any paper I cannot "do it;" did I volunteer that?—Yes. Directly you volunteered that I said that my request was simply made to you for an expression of your private opinion. I had no desire whatever, as I was well known in London, for any document to go outside your room. I made that remark to you at the time.

8879. With reference to the grounds on which I formed my opinion, had you any reason to believe that when I formed my opinion and stated, if I did state, that I was not prepared to give any document of that kind, that I did so because I was dissatisfied with your having exerted yourself to effect improvements, which evidently you did with great advantage to the public service?—You did not state that, because I believe at that time you were not acquainted with it, but you did say that other reports had reached your ears. I asked you to let me know what they were, but you declined to do so.

8880. You are aware of the reports, are you not?—No.

8881. You are aware that General Storks was called in to settle the matter; there was something like a cabal; very high words were used by you and the officer who found fault with you, namely Dr. Macgregor, on the occasion of the squabble that took place in the wards, and it must have produced a very bad effect upon the soldiers in the wards to hear two gentlemen in altercation, and using very high words.. That matter was settled by General Storks, and did not require me to interfere further?—That matter was settled chiefly by yourself. I have a letter from you exonerating me from blame on that occasion; and I can refer to a letter from General Storks to Lord Panmure referring to that subject, and which he read to me after he had sent it, in which he stated that Dr. Rowdon had behaved in the most becoming manner.

8882. On that occasion?—Yes; the date of that letter was Sept. 27th, 1855, and your letter bears date Sept. 11th, 1855.

8883. When I said that was my reason—not that I recollect it, but I do not doubt it, as you say I did so—for refusing any written document, are you not aware that the very first civil surgeon who came home, I think, asked me for some document of the kind, and I said, No, it is difficult; there have been different degrees of efficiency shown by different medical officers in the East; therefore if I were to give each man who asked me a document, I should find that I should have to give to some a much more satisfactory one than to others; and, therefore, I made up my mind to give none; but if any gentleman who served in the East made an application for a document and stated as his reason for making his application that he was an officer about to seek the charge of a civil hospital in this country, I would state what facilities he had had of making himself acquainted with hospital duties, and that I thought it must have been an advantage to him, but I gave no civil surgeon, or ever consented to give any civil surgeon, a general certificate; are you aware of that?—No, I was not aware of that. I hope I may say in very few words that I speak of this in answer to a question as to a matter of fact; I felt perfectly convinced at the time that I had not been fairly represented to Dr. Smith; but I did not regard it as a grievance from him; I felt that Dr. Smith was acting honestly, and to the best of his belief; and at the same time, as far as such a qualified opinion went, I met with the greatest possible courtesy to myself.

8884. (*President.*) You have stated what facilities you had for communicating with the principal medical officer, and the readiness with which he attended to your solicitations; but you were of opinion that the medical officers of the department durst not, for fear of the inconvenience and disadvantages that would result to themselves if they had proceeded in the way that you did. If you received thanks on account of the manner in which you discharged your duty, do you not think that that was an evidence that those who thanked you were prepared to encourage men to do their duty, and that they would also have thanked the officers of the department who had exerted themselves to do theirs, rather than treat them undeservedly because they had proceeded as you did?—The thanks which I received were not given by the Inspector-General, to whom my representation of defects had been made. He had returned to England and was succeeded by Dr. Linton. The principal medical officer expressed personally his sense (to use his own terms) of my services, and his great regret that I should have been called away so soon; for if it had been left to him to recommend, I was the last man that he would have parted with. That was Dr. Linton, and a written note was sent to me by Dr. Cruikshank, who was next in rank to him, to the same effect.

8885. You were thanked for the manner in which you had discharged your duties?—Yes.

8886. You were thanked on account of your having discharged your duties efficiently, I suppose?—Yes.

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8887. Then if that officer thanked you, do you think that it was natural that he would not have thanked an officer of his own department if he had done his duty efficiently ?—Yes, but the officers of his department, from my experience, had not the same facilities for doing their duty by representing the wants of the men, and urging attention to those wants, because there was one between the principal medical officer, Doctor Linton, and a man like myself, namely, a first-class staff surgeon.

8888. (*Mr. J. R. Martin.*) Which acted as an impediment ?—Yes.

8889. (*Dr. A. Smith.*) You have left it to be understood that those other officers did not make the proper representations, and they abstained from making them in consequence of the fear of the consequences if they had made them ?—That was my belief.

8890. You were thanked for having done your duty, why should they not have expected to be thanked also? —I was thanked privately on the spot, but the approval which army surgeons most regard in connection with promotion, viz., that of the Director-General, was nevertheless withheld from me ; and I conclude would have been similarly withheld from army surgeons under the same circumstances.

8891. (*President.*) You consider that you were independent and they were not ?—Yes. If I had been in the service, there is great doubt whether I should have been thanked at all. Certain it is that it would have been to me a disadvantage. If such had not been the general belief how could such a condition of things have been permitted to exist as did exist at the time that I took charge ?

8892. You had your wards put to rights, when officers of the same rank could not get similar advantages for the sick in their wards ?—Yes.

8893. (*Dr. A. Smith.*) What right have you to say that it was fear on the part of those officers which prevented them from representing their wants ?— There were many matters expressed personally and privately which, while they conveyed sufficiently the motives under which men acted, can hardly be made the subject of examination.

8894. (*Mr. A. S. Stafford.*) That was your impression from conversation ?—Yes.

8895. (*President.*) With regard to professional treatment, by what means do you consider the professional treatment of the sick might be more efficiently carried out in the army hospitals ?—By entirely changing the present distribution of duties among army surgeons, namely, to diminish the number of administrative or superintending surgeons, and to increase the number of executive surgeons. Also by abolishing the authority which medical officers of the different grades possess over those of an inferior grade, with the exception of the supreme authority which the principal medical officer should exercise over all medical officers acting under his inspection or supervision. At present there are no less than five different grades or ranks among army surgeons, namely :—Inspector-general, Deputy inspector-general, First-class staff surgeon, Second-class staff or regimental surgeon, and Assistant surgeon. To these, during the late war, were added, Acting assistant-surgeons, and Hospital dressers. As a general rule, to which there were but very few exceptions, the medical officers of the three higher grades were exclusively engaged, at Scutari, in administrative duties. So that the treatment of disease, and the management of the sick, devolved upon the two junior grades. Of these the second-class staff surgeons were so few in number, from the necessity that existed for the employment of all available men of that class for regimental duty, that in the barrack hospital only one was attached to each division of about 400 beds ; a very large portion of the duty of prescribing for the sick fell on the youngest officers, most of whom were acting assistant-surgeons and hospital dressers. By that custom, in regard to professional duties, it will be seen that those medical officers who by their previous experience as regimental surgeons might reasonably be considered the best qualified to distinguish and treat diseases, and especially to guard against the lingering or prolonged stay in hospital on other grounds, were the least available for those important objects. It always appeared to me, both from my own observation as well as from admissions that I have heard made, that strictly professional duties were rather held in disparagement by senior army surgeons, and that the great object of their ambition seemed to be to cut as short as possible the period for the performance of those duties, and to strive for promotion to the rank in which they would be engaged in superintending and directing others, perhaps scarcely at all, if in any degree, less qualified than themselves. In civil hospitals, as indeed universally in civil life, medical men of the very highest attainments, men of acknowledged pre-eminence and of world-wide reputation, such men as our Astley Coopers, our Brodies, our Brights, and our Watsons, to the most advanced period of their lives have regarded the treatment of disease, and the simple alleviation of human suffering, to be the highest prerogative of their art, and the greatest honour and object of their lives. As the medical department can never become other than an essentially civil department attached to the army, so it must always be subject to the same principles, for its regulation, as those which govern the same profession in civil life. It would, I believe, conduce immeasurably to the advantage of our sick soldiers, as it would undoubtedly to the credit and true interests of the medical department as a service, if the same rules for professional exertion were held in view in the army.

8896. What plan do you recommend for carrying out the changes you have alluded to ?—The first and most essential step would be to give full effect to the principle of competitive examination for admission into the service, so as to secure a body of medical officers of high professional qualifications who would no longer require the same amount of direction and supervision that has hitherto been considered necessary for men of their class. The next step would be to appoint such men on their first admission into the service to do duty at Fort Pitt, or some other large military hospital or station, for two years in the rank of assistant-surgeons, with the view of their becoming acquainted with the peculiarities which are said to belong to medical duties as distinct from those of civil life. After having done duty as assistant-surgeons for two years, and if possible with attendance upon lectures on military surgery, I would recommend that such men should be promoted to the rank of surgeon, and be appointed from that rank by the selection of the director-general to regimental duty.

8897. In what period ?—Two years.

8898. On what ground do you recommend such a short period of duty as assistant-surgeon, and such early promotion to the rank of regimental surgeon, as compared with past custom ?—Because, in the first place, men who have proved their professional competence and, indeed, their superiority, by passing a severe *bonâ fide* competitive examination, would not for a longer period be content to be under the same control and authority, or to be engaged in the same course of duties, as assistant-surgeons are, by the present War Office regulations and by present usage. The control and authority of one grade or rank over another, to be useful, should always be derived from superior professional claims. On any other principle men will never be disposed to yield any useful or effectual deference, even though they may be compelled to make an outward show of it. They may be made to go through a certain form and routine of duty, but without admitted professional superiority on the part of those invested with power, and to whose orders and directions they are subject, the professional services of subordinate medical officers, as far as my experience has informed me, have always been less effective and less beneficial to the suffering men, than when free scope and independence have been given for the unfettered exercise of professional ability. In the second place it is well known that, according to present usage, if

the assistant surgeon of a regiment is a reasonably good man, it is frequently the custom for the surgeon to divide the patients equally between himself and the assistant-surgeon. Equal competence and equal share of duty might with great advantage be attended with equality of rank and of responsibility. If such a regulation were made, it would serve to infuse the true spirit of competition, which is found such a powerful inducement to exertion in civil life.

8899. Do you consider it desirable that all executive medical officers should be placed on the same footing? —Yes; in all professional matters they should have the same control, and, of course, with it the same degree of responsibility, subject, nevertheless, to the full authority and supervision of the principal medical officer, who would be either an inspector-general, or deputy-inspector-general, or in cases of emergency, the senior executive officer. I believe that if you place confidence in men so far entitled to it as those must be who have passed a strict competitive examination, and let them feel their full responsibility, they will labour with far greater zeal, and to much better purpose, than if they are compelled to linger on in a subordinate rank and sphere of duty during the best years of their lives, without any corresponding advantage.

8900. Do you mean to say that you would recommend no distinction to be made between executive officers of 15 years standing, and those of two years? —No, I would make considerable distinction, but not by placing the latter under the orders and directions of the former—or in other words by spoiling both, to the detriment of the sick publicly committed to their care. I would regulate the distinctions so as to raise the senior, without degrading or keeping down the junior, namely, by confining the distinctions to pay and professional standing—the latter having reference to personal reputation and status. In regard to pay, if an assistant surgeon commenced with 7*s.* 6*d.* per diem, to be increased on promotion to full surgeon after two years, to 10*s.* per diem, after 10 years' service I would suggest that it be increased to 15*s.*, and after 15 years' service to 20*s.*, with no further increase until promotion to the rank and administrative duty of deputy inspector-general; and half-pay to be according to the same proportion.

8901. What distinction would you recommend with regard to professional standing, and relative army rank?—All executive officers under 12 years' service to hold the relative rank of captain with the same allowances, and with the title of regimental or staff-surgeon; all executive officers above 12 years' service, to hold the relative rank of major with the same allowances, and with the title of senior staff-surgeon.

8902. How would you adapt those distinctions to the present state of the service?—Assuming that there are but few first-class staff-surgeons under 15 years' standing, the changes referred to would admit of ready application. The titles of first and second class staff, which have always been found objectionable, would be abolished, and those officers at present holding the title of first-class staff surgeon would hold instead that of senior staff-surgeon, with the same relative army rank as at present. The difference that the proposed changes would make in regard to officers of this grade would be a slight increase of pay, and that their duties would be entirely executive and not administrative. In the case of the next grade, viz., the regimental or second-class staff surgeons, those officers under 12 years' service would retain their present relative army rank and allowances, namely, those of captain; and the officers above 12 years' service would hold higher relative rank and allowances, namely, those of major. In regard to pay, those above 10 years service would have an increase of 2*s.* per diem, and those above 15 years of 7*s.* per diem. The increase in the latter instance would be an equivalent for the increase of pay which officers above 15 years' service would receive on promotion to the rank of first-class staff surgeon now proposed to be abolished. Some few instances, no doubt, exist of full regimental surgeons under 10 years' service, who at present receive 13*s.* per diem. In such cases as now exist, and which will shortly disappear, it would be desirable that their pay should be uninfluenced by the proposed changes. In respect to title, those officers attached to regiments under 12 years' service would hold the same title as at present, those above that service would be called senior surgeons. Those officers of that grade on the staff and under 12 years would be simply styled staff surgeons, and those above 12 years would drop their present somewhat disparaging prefix of second class, and become senior staff surgeons. With regard to the next rank, the present assistant-surgeons above one or two years' standing would have their pay increased by 2*s.* 6*d.* per diem and be promoted to the rank of full surgeon, with the relative army rank and allowances of captain. These rates of pay are based on the supposition that the increase of pay to army surgeons generally, which has been advocated on all hands, and which was specially recommended by the late select committee, is now about to be carried out, and the above-mentioned figures are recommended simply to carry out the object of providing due distinction and remuneration to medical officers in proportion to their length of service, without placing one grade under the authority of another.

8903. How do you consider these changes would lead to increased efficiency in the treatment of the sick? —The number of executive officers would be largely increased by the addition of the present first class staff surgeons, who from their mature years, and the experience they must have obtained as regimental surgeons, would be highly qualified for active professional duty. I also believe that great additional strength would result to the service by duly encouraging and raising to a position of greater professional independence and power the other medical officers of the service. For all purposes of discipline and supervision of professional conduct, I believe the authority of the principal medical officer in charge of hospitals and divisions would be amply sufficient.

8904. What other changes would you recommend with the same view?—A reduction and condensation of all accounts, returns, reports, and registers now required by the War Office regulations, page 36, to be kept by medical officers. Many of these, such as the 4th, 5th, 6th, 10th, and 11th, might be advantageously transferred to the stewards and wardmasters of the medical staff corps (1855), who hold respectively the rank of serjeant-major and colour-serjeant. Others, such as the 2nd, 3rd, 7th, and 9th would naturally fall to the hospital registrars, the appointment of which officers has been previously recommended. In regard to No. 9 in these returns, my own experience would lead me to believe that it cannot be either necessary or useful to keep a detailed history of every case of disease, with the treatment employed, and a daily entry of diets and extras. I have frequently given up a great deal of time to writing out these registers, but with the full conviction at the time of doing so that they would never be looked at, and that it was lost labour. It would be unreasonable to suppose that any inspector could wade through a daily register of such a mass of cases, yet for want of a judicious selection a good deal of valuable matter has been allowed to run to waste. I would, therefore, recommend that only such cases should be minutely registered as the medical officer in charge should think expedient, subject to the approval of the principal medical officer. The cases so selected should be minutely registered by the hospital registrars, and would, together with the other returns and reports kept by him, prove of great value, with a view of supplying a continued series of army statistical records.

8905. What returns and reports would you still recommend to be kept by executive army surgeons?—First, a letter book for the purposes expressed at page 36 of the War Office regulations; secondly, a morning state of the sick in hospital, and death reports, to be written out by the wardmaster and signed by the

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medical officer in attendance ; thirdly, a weekly report of the condition of the wards, and the progress of cases, enumerating the admissions, discharges, the total number treated, and those remaining under treatment ; this weekly report to be sent to the principal medical officer for his examination, and then to be forwarded to the hospital registrar ; fourthly, daily diet rolls to be filled up in figures by the ward-master, and in words by the executive surgeon, and signed by him.

8906. Do you think it desirable that a daily record should be kept of the treatment of patients ?—Yes ; such a record might be readily made by having at the head of every bed, besides the admission card containing the name of the patient, &c., a long card on which all prescriptions should be written by the surgeon in attendance at the time of visiting the sick. Those cards would be used by the dispensers for making up the medicines, and would be replaced at the heads of the beds. They would thus at all times be ready for reference as to previous treatment, especially on the occurrence of a change of medical officers, and also for the examination of the principal medical officer. The fact of all treatment being so recorded and ready for reference at the head of the patient, would probably prove an incentive to the utmost zeal and exertion on the part of the medical officer. Those cards would also furnish the registrar with the necessary data as to treatment and its results, in such cases as may require to be fully detailed.

8907. What do you consider would be the chief advantage of the change which you have suggested in the mode of keeping returns and reports ?—That medical officers would be spared a great deal of non-professional and unprofitable labour, by which means their exertions might be concentrated on the direct management and treatment of the sick. At the same time by providing for the due condensation, classification, and registration of hospital returns and reports, a large amount of information of an infinitely more reliable and useful nature than has hitherto existed, would become available for the construction of army hospital statistics.

8908. Is it your opinion that the changes you have mentioned would enable army surgeons to attend, with due regularity and efficiency, a greater number of sick than they can do under the present system ?—Yes ; on the principle of the proper division of labour, better results would be obtained, and the economy of the service in the end greatly promoted.

8909. During your residence in the barrack hospital at Scutari, did you observe any causes not yet mentioned which tended to frustrate medical treatment and retard the recovery of the sick ?—Yes. The duties of the hospital sentries were very inadequately fulfilled in regard to the objects expressed in the War Office regulations, page 25, article 54. This was particularly observable in the want of proper regulation of the latrines. These latter were paved with stone, and were not only kept constantly wet by ablutions, but were also necessarily open to continuous currents of air at all seasons of the year. The men in hospital were, nevertheless, permitted to make them a lounge during several hours of the day for the greater convenience of smoking and other things forbidden in the wards ; men becoming convalescent from diarrhœa, dysentery, fever, rheumatism, and pulmonary affections, frequently suffered relapses from the above-mentioned cause. I represented the evil more than once, but from some cause which I could not ascertain, the difficulty was never remedied.

8910. Did you consider that the medical department had sufficient independent authority in that and similar matters ?—No ; questions involving the sanitary condition of the troops, the preservation of health among the ablebodied, and the complete recovery of the convalescents, come as fairly under the consideration of the medical department as the mere treatment of disease. It will, therefore, be to little purpose that by aid of the improvements which are taking effect in other departments of the army, our troops become the best trained, the best armed, the best clothed, and the best fed soldiers the world has yet seen, if greater effect is not secured to the knowledge and skill of the medical department in averting the outbreak and spread of disease as well as to the most ready and efficient treatment of the sick and wounded. These all-important objects can, I believe, be only carried out by the institution of an officer of health to the army, holding such rank as would enable him to secure the consideration and fulfilment of those objects. That point would, no doubt, be far more ably represented by other witnesses. I do not, therefore, think it becoming in me to trouble you with any further remarks on that head.

8911. You spoke of inspection ; with regard to the frequency of inspection in the wards of hospitals, what should you say are the objects of it ?—My experience is, that they did not take place more frequently than once in a month. I naturally witnessed many such inspections, and they were generally performed with great speed and haste. I should rather say, that the chief points that were brought to the attention of the officers who inspected were matters of ordinary routine, such as the cleanliness of the boards, the cleanliness of the eating utensils, and other utensils, the general appearance of order, the arrangement of the beds. &c. But it struck me that those inspections were not so strictly professional as they might be, that is to say, that although those above mentioned conditions were very necessary subjects of inspection and were examined into, they constituted the whole of the inspection, and were made to supersede the necessity for examining into the condition of the men, how long they had been there in their beds, why they were still kept in hospital, what treatment they received, and other matters of great consequence to the service, as well as to the economy of the hospital.

8912. You think that it was an inspection of the furniture and state of the ward rather than into the state of the patient ?—Yes ; my experience only gives one instance of one inspection being made, by Dr. Linton, into the state of the patients.

8913. If you were right in what you said before, then the inspecting officer cannot know as much about the sick as the man in the habitual treatment of them ; do you think that that arrangement is a good one ?—Except so far as this :—If a medical officer felt that his duties were estimated according to their worth, that is, if he did well it would be recorded to his advantage, and if he was slovenly it would be recorded to his disadvantage, I hold that you would apply, in the most efficient form, a stimulus to active exertion, and a due animadversion upon neglect.

8914. (*Mr. J. R. Martin.*) Such results do not flow from the present course of inspection, according to your view ?—No ; my experience would be decidedly contrary.

8915. (*Dr. A. Smith.*) You say that the inspections were about every month ?—Yes.

8916. By whom ?—Sometimes by the deputy inspector-general, and at other times by the inspector-general.

8917. You state that, so far as you know, such and such points were inquired into, but others were not ?—They were not.

8918. In a former answer, you stated that I sent out an authority for them not to interfere with your cases, or the cases of the civil surgeons ; that being the case, can you speak fairly as to what was the nature of the inspections with reference to cases where no such restriction existed ?—Yes, because I frequently accompanied them to see how the inspections were done, and to learn something of the management of the hospital.

8919. You frequently accompanied the inspecting officer into the wards of others ?—Yes, and also the executive officer.

8920. But do not you know that a kind of feeling exists that the officer of one division will not accompany the inspecting officer into another division, lest he should have some fault to find with the officer of that division ?—It was obviously with the consent of the medical officer.

8921. The medical officer in charge of the sick in the division ?—Of both.

8922. (*Mr. J. R. Martin.*) Would it not be an advantage that such a course of inspection should be as public as possible, and open to all medical officers ?—Yes, I think so.

8923. (*President.*) Have you any remark to make on the mode in which the inspections are conducted, as to the tone in which the junior officers are addressed ?—I think it is of the highest consequence for effective treatment of the sick that the sick themselves should place full confidence in the treating medical officer ; and I frequently had occasion to notice, and to regret, the sharpness of tone with which remarks were made on questions which might fairly have been left to the judgment, from their previous knowledge of the cases, of the executive medical officers.

8924. Was that done in the presence of the patient e —Yes, of course ; it was done in the presence of all th? patients.

8925. (*Mr. A. S. Stafford.*) Do you think that the number of medical officers, on the whole, was sufficient? —I think quite sufficient. After the civilians had reached them they made a considerable addition of something like 18 or 20 acting surgeons of independent authority. I think, if the executive officers had received the large accession resulting from the 1st class staff surgeons undertaking professional duties ; and if the junior officers had been given more power, so as to be more efficient, then there would have been an ample supply of army medical officers, and especially if the reports and returns had been delegated to proper officers.

8926. What is your opinion of the conduct of soldiers in hospital as to their patience and endurance?—I think that they were extremely patient, and their endurance was testified on all hands. I believe that latterly there was a great deal of malingering—in my time.

8927. (*President.*) Up to what date were you there? —The 1st of February 1856.

8928. (*Mr. J. R. Martin.*) Do you imagine that a strong tendency to malingering was produced by their privations ?—By the reaction which followed the publication of their privations in England, men were becoming spoiled. I should say that the great business and duty of a hospital is, to take the men in and cure them as quickly as possible, and send them off to duty as quickly as possible ; but if all kinds of appliances and indulgenees are sent out for the amusement of the sick—chessboards, draughtmen, and such things, those men, especially cunning men, as many were, felt it too pleasant a place to abandon for the front, so long as they were allowed by a young medical officer, who hardly possessed sufficient power over them, to remain in hospital. Of that I can mention one particular instance. When the hospital at Kulali was broken up I received into my wards in one night 47 men, and it occupied me till about one in the morning to get them all into their beds, and properly attended to, and their diseases diagnosed ; but I came to the conclusion, from a vast number of those cases, that they ought to be at the front, and the next morning I sent off many of them. One man in particular struck me as being a fine, tall, able-bodied serjeant, six feet two inches high, with obviously nothing the matter with him. This man had been drawing extras, half a fowl daily, eggs, and brandy, and had received a good deal of indulgenee from the lady nurses at Kulali, but he was obviously being pampered and spoiled. I sent him off to duty. By a most excellent arrangement at that station no man was allowed to go back to another ward than the ward of the officer who had discharged the man. That man never came back, and of 24 other men discharged within a few days after none came back ; they all went to their duty, and they were found fit for duty—and most of them had been four months in hospital —there were none less than two months.

8929. You think that they went back to duty reluctantly ?—They found that they had no chance where they were. Their cases were palpable cases of malingering, and when men are once detected at it they are very glad to get off to duty.

8930. But a long siege generally produces such results ?—Yes, with other causes spoiling the men.

8931. (*President.*) This happened after the period of privation and hardship ?—Yes.

8932. It was when the siege was over ?—Yes, Sebastopol had fallen. This was in November, but we had still a larger army at the front, and it was fully expected that we should require every man that could be spared for the spring operations.

8933. (*Mr. A. S. Stafford.*) If the state of things which you have described was in some degree the effect of the system that does not throw blame on the medical officers who were in charge of those men ?—No ; certainly not.

8934. (*President.*) You stated that they were allowed indulgences, having deceived the younger officers who had not power enough over them ?—Yes.

8935. Those are the officers over whom you wished to withdraw the power of inspection ?—I do not propose to withdraw from them the power of inspection, but simply the supervision and control of the 1st class staff surgeons ; leaving them still under the absolute control of the principal medical officer. They were generally acting assistant-surgeons and dressers, and were a very different sort of men from such as would pass a competitive examination in London. Very different from such men as those from whom promotion would take place, who must be at the least of two years' standing.

8936. (*Mr. J. R. Martin.*) Of an inferior class to those whom you would propose to send into the army ? —Yes.

8937. (*President.*) Have you any cognizance of the methods in which confidential reports were made ?— Yes, I think generally speaking the system was not understood ; men, without being quite sure of their ground, were exceedingly unwilling to step at all out of the way of routine, so as to attract notice. I have often heard it said by men in the army that the best way to get on was to keep perfectly quiet, and never let your name be heard ; but if you stir either one way or the other, either under a sense of duty or a love of meddling, the result will be the same.

8938. (*Mr. J. R. Martin.*) A state of listless quiescence ?—Yes.

8939. (*President.*) Your opinion is only one gathered from the conversation of other persons ?—I am obliged to shape my answer as distinctly as I can ; but I should be sorry that it should appear as more than my own individual opinion.

8940. Supposing that war was to break out again, and that the number of officers commissioned in the army medical department were insufficient, would you recommend again the employment of civil surgeons ?— Yes ; but I would not recommend a civil hospital as distinct from a military hospital.

8941. Like the hospital at Smyrna ?—I think that that is open to objection.

8942. Why ?—Separate establishments, rival establishments, competing one with the other, lead to enormous increase of expense, and, among other things, the result is, I think, to spoil the men.

8943. How do you mean to spoil the men—do they get differently treated in different hospitals ?—Yes, I think with one system of military hospitals, subject to some changes which are on the point of being carried into effect, that the way of meeting emergencies in the case of war bursting out with an insufficient number, would be by introducing the extraneous aid of the civil surgeons to do duty, either in those military hospitals or to go anywhere where their services may be needed, at the front, or elsewhere.

8944. (*Mr. J. R. Martin.*) But under strictly military rule ?—Yes, that they should hold, in fact, the local

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rank of executive officers, subject in every way to the same degree and form of medical supervision.

8945. (*President.*) Do you think that civilians will attend to the rules of the military medical service, and submit to its discipline willingly ?—Certainly.

8946. Taking your own case, an exception was made for you, you were not placed under the same discipline as an army medical officer of the same rank ?—I was entirely subject to the supervision and control of the principal medical officer.

8947. Of him only ; whereas an army surgeon would have been subject to the control of the principal medical officer, and would have been subject to the control of an intermediate inspecting officer ?—Yes, which I hold to be a great evil.

8948. Would he submit to that willingly ?—Yes.

8949. Would you have submitted willingly to be under an intermediate inspectorial officer ?—No, I should not have done so, because I considered my standing in my profession justified me in expecting better things.

8950. Would you exclude from among the civil surgeons men of the same standing as yourself ?—No, I would rather recommend in the event of a war the employment of civil surgeons to do duty in the military hospitals, and that they should be subject to the same control as that which I have recommended for all the executive army surgeons, namely, that of the principal medical officer.

8951. If the present system were not changed you think that there should be exceptional treatment for civilians ?—Yes, I think so.

8952. (*Dr. A. Smith.*) Are you correct in stating that you were only under the superintendence of the principal medical officer ; I think, if I recollect rightly, you were under the superintendence of the principal medical officer and of the deputy-inspector of the division ?—No, I have a copy of your former letter in March and I have a copy of another which you wrote to inspector-general Dr. Cumming, repeating, as late as the 12th of September, the fact that in consequence of the position which those civil surgeons held in their profession and their standing in it, it was not possible for you to make other arrangements than that they should be subject solely to the supervision of the principal medical officer of the station.

8953. How was it, then, that when the disagreement took place between Dr. Macgregor, in the hospital in which you were serving, and yourself, you did not at once raise the question and say that you had nothing to do with him ?—I did.

8954. But you recollect that you continued the altercation that took place between you and him, and you spoke of your reasons for doing this, as if you were recognizing his authority to question you, though you say no other person had authority to question you, except the principal medical officer ?—The only point was this,—he wished to know the number of men who were obliged to keep their bed in that ward, and by an act of his own a case of typhus fever was put into the one only empty bed in that ward a few hours before without my knowledge. When I went in and found this man in this dreadful state, surrounded by men with wounds and bruises, I felt it necessary to put half the men out into the corridor at once. The next morning when the deputy inspector-general came to know the number of men who were required to keep their beds, I had no objection to give him the information, but I told him that as half the men were in the corridor, I could not tell him then, but would give him information within half an hour, which was done.

8955. (*Mr. J. R. Martin.*) On the whole, it would appear to be your impression that the hospital regulations as now enforced operate practically to discourage medical officers from reporting the deficiencies in their hospitals ?—Yes, I have no doubt in my own mind about it.

8956. Therefore it appears to you that the effect of that course of inspectorial service is to diminish the amount of strictly professional knowledge possessed by that class of officers ?—Yes. Professional matters were not likely to be inquired into ; of course the executive officers, hearing that their wards were to be inspected, naturally directed their attention to the state of those things which they knew would be inquired into.

8957. (*Dr. A. Smith.*) On the occasions when those inspectorial officers were going round the wards, did you not frequently see that they would go and take the ticket from the bed head of a patient, look at it, and ask the officer under whose treatment the patient was, the circumstances of his case ?—I never saw that done but once. Although I attended many other inspections, I never saw it done but in the single instance that I have above referred to.

8958. With respect to inspections, you limit your experience to the hospital at Scutari during a time of pressure ?—No ; not entirely to a time of pressure, for only occasional pressure existed there after June 1855.

8959. But during the time of war ?—Yes.

The witness withdrew.

T. Alexander, Esq., C.B.

Thomas Alexander, Esq., C.B., examined.

8960. (*President.*) You have given a good deal of attention to the subject of the division of the different ranks of the medical department into executive and administrative ?—Yes.

8961. What alterations would you recommend in the existing system ?—I think the rank of first-class staff surgeons and senior surgeons of artillery might be done away with. I would have only two inspectorial ranks, viz., deputy-inspector and inspector-general; the ranks would then be, staff and regimental assistant-surgeons, staff and regimental surgeons (and all surgeons, after 20 years' service, should have the rank of surgeon major), deputy inspector-general, inspector-general, director-general.

8962. You would propose two administrative, and two executive ranks ?—Yes ; only two administrative, and all others executive.

8963. You would not confine the director-general to the surgeon-majors, in making his selection for the administrative ranks ?—No ; this change would open the field of selection to the director-general, over all the surgeons, instead of at present only over a small number of first-class staff surgeons.

8964. Would you make the relative rank carry any practical advantages with it, beyond what it does now ?—I think the relative rank ought to carry all the advantages, as to pay and allowances, honorary distinctions, funeral honours, choice of quarters, &c.; and, when medical officers are members on boards regarding sites for barracks, hospitals, positions of camps, or anything connected with the sanitary arrangements of the troops, they should sit and sign, according to their rank, and dates of their commissions, but on no account ought a medical officer ever to assume any command. Staff and regimental assistant-surgeons on appointment should have the relative rank of lieutenant, according to the date of their commissions, and after 5 or 6 years' service the rank of captain with the attendant allowances, choice of quarters, &c. As an assistant-surgeon enters the service 5 or 6 years older than the military officer, when he has served 5 or 6 years he would then be equal in standing as regards age to the military officer of 10 or 12 years' service. Staff and regimental surgeons should have the relative rank of major on appointment, and after 20 years' full-pay service be styled surgeon-major,

with the relative rank of lieutenant-colonel. The surgeon, being in medical charge of a battalion, holds a most responsible position, certainly much more so than that of a captain commanding a company; higher relative rank would only give him the advantage of better quarters and other allowances, but he should never make choice before the commanding officer.

8965. Might it not happen that a surgeon-major would have the relative rank of lieutenant-colonel of prior date to that of the lieutenant-colonel commanding the regiment?—No medical officer ever takes rank above his commanding officer. In quarters wherever they are, it is always put up, "Commanding officers' quarters;" the best quarters are always told off for the commanding officer.

8966. (*Mr. J. R. Martin.*) You do not design that the medical officer should have a preference over the commanding officer?—Never.

8967. (*President.*) Would you allow him, in case the lieutenant-colonel of the regiment was junior, to rank before him?—No, certainly not. He must always be under him. The relative rank would only give him a prior choice of quarters over the other officers, extra fuel, and light, &c.

8968. (*Dr. A. Smith.*) Would it not create this difficulty:—Supposing the whole of the officers of the regiment were invited to the table of a general officer, the question would arise, who was to take out the wife of the general officer?—It might be arranged in such a way that the medical officer of equal relative rank, was invariably to rank after the commanding officer of his regiment; were the relative rank of major bestowed upon him, it would raise him in the estimation of his brother officers, and his opinion would, no doubt, with regard to sanitary and other matters, have greater weight with the commanding officer. The deputy inspector-general, on appointment, should have the relative rank of lieutenant-colonel, and after 3 years' service in that rank he should rank as colonel, as is now granted to military officers by a late warrant. As the deputy would generally speaking be the inspecting and highest medical officer on the station (with few exceptions), I am of opinion that the relative ranks now mentioned would not be considered too high. Inspector-general should rank as brigadier-general on appointment, and after 3 years' full-pay service in that rank he should have the relative rank of major-general. However, when in the field as principal medical officer of an army, he ought at once to have the rank of major-general.

8969. (*President.*) What would you propose as to promotion, which by seniority and which by selection?—All the executive ranks, in my opinion, should go by seniority; a standard being laid down, and admission into the service being by competitive examination, no medical officer ought to be allowed to hold the commission of assistant surgeon who is not fitted to be surgeon. The administrative ranks should be by selection, for merit, zeal, efficiency, duties or services performed, and also for administrative talent.

8970. Do you mean seniority in the whole army list, or within a certain group of stations?—I should much prefer the whole army list. There are such rapid communications now by steam, that I think it would be better than by stations.

8971. Or if you could divide the whole globe into two stations for promotion?—Yes, you might; but the same should be clearly laid down.

8972. Supposing the other was found too expensive?—Yes; you might carry out the recommendation of the director-general, viz., if an officer on one of the stations was passed over by a junior, by antedating the commission of the man who was passed over, the first opportunity. In the case of selection for the administrative ranks, were two candidates equal, the preference ought to be invariably given to the senior.

8973. When promotions are made by selection to the administrative ranks, would you recommend that to be done under any restrictions or regulations?—I think the director-general, on recommending these promotions, should give his reasons in writing to the Commander-in-Chief; and if the latter deemed them sufficient, the promotions should take place.

8974. The Commander-in-Chief being the authority to give the promotion?—Yes; but the director-general ought to recommend; and, in the event of any future reference, the reasons assigned by the director-general for the recommendation might be noted in a book to be kept for future reference at the board.

8975. Do you propose any scale of retirement different from that which exists at present?—I think it would be looked upon as a great boon, if officers were allowed to retire after 20 years' service; they seem very desirous to have it; not that I think many of them would embrace it. Every officer ought also to have an unqualified right to retire after 25 years' service, as at present; and retirement ought to be compulsory at 30 years' service for executive officers, and at 35 years' service for administrative officers. If an officer were placed on half-pay by reduction or from ill health, I would recommend the same rate as the director-general, viz., 3-4ths of the amount that he is receiving at the time; but if he retired at his own request it should be only 5-10ths at 20 years' service, and 7-10ths at 25 years'. By doing away with the first-class staff surgeons you would require six or eight more deputies and two inspector-generals; of the two latter, one as inspector-general for Great Britain, the other for Netley. (*See Appendix No.* X., 2.)

8976. Would you propose to give to any of the old officers full-pay retirement?—Yes, good service pension to a certain number. Full-pay retirement for a certain number of executive officers.

8977. (*Mr. J. R. Martin.*) And a step in brevet rank?—Yes, you might, but the pay of all ranks ought to be increased and commence at once, instead of serving two years on the minimum, as at present, the same charge allowances as at present for the principal medical officers at stations and in the field. Brevet rank should also be granted, and carry 2*s.* pay per day with the attendant allowances of the rank; it might be given for special services in the field or otherwise, and the reasons might be given for promoting such officers; such would be attended with great advantages, as it would hold out a stimulus for exertion, and you need not remove the medical officer from his position, which might be one of great usefulness. The assistant-surgeon, when in charge of a battalion, ought to have some extra allowance, the same as is given to other military officers. More leave ought also to be granted, and a fair proportion of leave should be given to sick medical officers for the recovery of their health. A roster for all ranks should be kept and strictly adhered to. Certain fixed periods for service on the staff abroad, say for unhealthy stations three years, for healthy stations, five years. Regimental medical officers would take their chance with their regiments. No officer on leave ought to pay for the performance of his duties.

8978. (*President.*) Would you make any alterations with regard to forage?—Forage ought to be given to all surgeons without paying for the same. Servants and rations for the same ought to be given according to rank, if the former be not granted from the hospital staff corps, a certain allowance should be given with rations for each servant the officer is entitled to, provided he is kept. At present, whatever be a medical officer's rank, he only draws money allowance for one. Were a certain number of the most meritorious officers of the department styled honorary surgeons and honorary physicians to Her Majesty, the same would be looked upon as a boon.

8979. Would you make any alteration in the mode of conducting confidential reports?—I think it would be very desirable that they should be placed on the same footing as the military confidential reports. If any report is made against an officer, the specific cause of complaint should at once be made known to him, so that he might have an opportunity of clearing himself; if delayed, the opportunity may be lost. All the rules and regulations regarding promotions,

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reductions, retirements, leave, roster, and periods of service on stations should be clearly laid down and published, so that candidates might know what inducements were held out for them to enter Her Majesty's service, and such would give great satisfaction to the department.

8980. Would you extend that remark to other matters, to the regulations for hospital duties ?—There ought also to be drawn up and published a new code of regulations, clearly and distinctly laying down the duties of the different ranks, the returns and reports called for ; when they were due ; the requisitions that ought to be made, how they were to be made, and upon whom ; also a revised nosological table, so adapted that the Registrar-General could include the mortality of the army from the different diseases in his returns.

8981. Would not that be a very great advantage to the army if the amount of sickness and mortality were kept constantly before the public, so that they might take measures to improve the condition of the soldier ?—Yes ; it would bring prominently before them many facts which are too little attended to at present.

8982. That would act, would it not, as a spur to the authorities, and to the House of Commons ?—Yes, by bringing before them prominently the data that would be observed.

8983. A good many of the existing regulations have now become obsolete, have they not ?—Several of them.

8984. For example, it was stated by a witness that the duties laid down for an assistant surgeon are the duties of very little more than a dresser ?—By the regulations the medical officer is desired " In order to " insure the most effective aid to the surgeon, he " should allot to the assistant surgeon specific duties."

8985. Is there not also a statement of the duties of the assistant surgeon himself ?—Yes. " Making health " inspections weekly, bandaging and dressing sores " and ulcers, filling up the diet tables, preparing the " medicines prescribed for the patients, and seeing tho " same invariably administered twice a day."

8986. Do those regulations require revision ?—I think it would be advantageous if this book were brought up to the present day, and a copy of every return called for inserted in it, the duties distinctly laid down of all ranks, also a revised nosological table.

8987. Have you any suggestion to make as to the constitution of the medical board ?—I think there ought to be a director-general, an inspector-general of hospitals, and two others. The director-general should be supreme. A board always delays and neutralizes responsibility, and can never act so energetically and decidedly as when the responsibility is lodged in one individual.

8988. (*Mr. J. R. Martin.*) The board would be a scientific board ?—It would not be a board at all. The director-general would be supreme, but the inspector-general ought to have a separate office at the board. His duties would be principally those of inspecting officer in Great Britain, of all the various hospitals, barracks, and camps, in addition to examining into the treatment of the sick, and the state of the hospitals ; he would also combine the duties of sanitary officer, and at his periodical inspections inquire and examine into all the sanitary arrangements of the different hospitals, and barracks, viz. : ventilation, accommodation, cubic space allowed for each man, drainage, sewerage, dieting, and clothing, pointing out to the various medical officers what measures he deemed necessary on those points, and holding them responsible for carrying out all sanitary measures connected with their battalions. This officer ought also to be invariably consulted on sites for hospitals, barracks, and camps, their ventilation, construction, and other sanitary arrangements of the army. He ought also to have it in his power to communicate directly on all such matters with the Minister-of-State for War, and furnish to him a report of his inspection tour, with whatever suggestions and improvements he deemed necessary. A copy of the same report ought to be sent to the director-general.

8989. (*Dr. A. Smith.*) Do you mean that a report ought to be sent by this inspector-general, who is to be in the director-general's office, direct to the Secretary-at-War, instead of making the director-general the medium of communication and responsible for that report ?—I think that this officer should be so far independent of the director-general, though subordinate to him, having the certain duties above-described particularly set apart for him ; all correspondence on these matters should come to his office. It would relieve the director-general of a great deal of his present labours.

8990. (*President.*) Ought not the report which he makes to the Horse Guards to go through the director-general ?—Yes, it might. I see no objection to that.

8991. (*Mr. J. R. Martin.*) The functions being correspondent and co-ordinate ?—Yes, quite so, though under the director-general ; nothing need go through his office without the director-general knowing it.

8992. (*Dr. A. Smith.*) Do not you conceive that the sanitary officer ought to be liable to be ordered to any place if the director-general received information from the surgeon of a regiment that any particular sickness prevailed ?—Quite so ; such would be one of his specific duties, to visit at once any regiment when sickness prevailed.

8993. Then he must be a subordinate officer to the director-general ?—He should be so far under him, yet have a separate office and specific duties ; I do not think that he ought to be removable at the will of the director-general. The director-general would have his own personal staff, but I think that an officer of this kind should be so far independent, though under the director-general.

8994. (*Mr. J. R. Martin.*) He should be nominated by the Minister for War ?—Yes.

8995. (*Dr. A. Smith.*) Is it the practice in any office for the Minister for War to nominate any other officer to work with the head of another department without the concurrence of the head of that office ?—You have the quartermaster-general and the adjutant-general so far distinct, and they are under the Commander-in-Chief.

8996. But they do nothing except with the concurrence of the Commander-in-Chief ?—Nor need this officer do so, without communicating it to the director-general.

8997. (*Mr. J. R. Martin.*) In that case his independence is a necessity of his position ?—Yes. Had such an officer been at hand during the Crimean war, it would and ought to have been his duty to have proceeded thither, and seen what was necessary as regarded sanitary measures ; and having full powers in these matters, the same could have at once been carried out. All inspecting medical officers on stations ought at their inspections to point out to the various medical officers under them, what sanitary measures they deem necessary to be carried out, and desire them to attend to the same. Such, in my opinion, is the only true and practical working of sanitary measures in the army. There are at present in the army medical officers as well versed in sanitary matters as any in civil life, only, powers must be granted to them to have their recommendations on those matters carried out. There ought also to be another officer for statistics ; a thoroughly practical man appointed expressly for receiving and examining into all reports from the different medical officers from all parts of the world, for culling out facts, data, statistics, and cases worthy of publication. Were such statistical returns, facts, and interesting cases published (with the names of the officers attached who had drawn them up), not only would a stimulus be held out to officers to exert themselves, but a mass of facts and data of much importance would be soon obtained, which might be of immense importance at some future period. These reports could be published annually at the expense of the government. There

ought to be, in addition to these two officers, a deputy-inspector as professional assistant to the director-general.

8998. (*President.*) You would make it a statistical department for the army within the medical board ?—Yes ; one officer expressly set apart for statistics would in my opinion be sufficient for these duties, a board for statistics not being required ; but I would combine the sanitary officer and the inspecting officer, I think they would work better in one individual than separated.

8999. (*Dr. A. Smith.*) Do you see any objection to the sanitary officer being the president of the statistical board ?—He would not have time, besides it would be better were the two duties separated.

9000. (*President.*) The statistical officer ought to be a man at his desk workiug figures, aud the sanitary officer ought to be a man continually going about and inspecting ?—Yes, such is my opinion.

9001. (*Dr. A. Smith.*) If there was a statistical board and a sanitary officer, he might be the inspector-general and president of that board ; there are certain times when he must make his inspections of different barracks and hospitals. We cannot contemplate, with the small force that we have in this country, that as a sanitary officer he would be employed more than one half of the year ; a case might arise in which it was necessary to send a sanitary officer to Colchester to ascertain what was deficient there, he would then immediately return to his duties in London, and he would have nothing to do unless he was president of this statistical board, to which he might at least give seven months of his attention ; the other members of the board, if constituted of three, would work up all the points ; what would there be objectionable to that ?—This inspecting and sanitary officer might be called away on duty at any minute, and I consider that only one officer is required for statistics, not a board.

9002. (*President.*) Do not you think that, generally speaking, the same man who would have a talent for statistical inquiries would not be likely to have also the peculiar qualifications necessary for sanitary matters ?—I think that they are two distinct duties, one may be a good pen-and-ink man and the other might not like it at all, in fact they are quite different.

9003. (*Mr. J. R. Martin.*) The other would be the medical topographer of the army ?—Yes.

9004. Do you contemplate that he should also receive topographical reports and sanitary reports from various foreign possessions ?—Yes.

9005. Sanitary reports and topographical reports ?—Yes.

9006. (*Dr. Sutherland.*) From your experience in the Crimea you know the state of things which existed from troops arriving, from troops shifting ground, and fresh camps being occupied ; would it be advantageous to the service, supposing a similar event to happen again, that there should be a sanitary officer attached to head quarters to look to that work from day to day ?—Yes, such an officer would be decidedly necessary, and his duties would be most important.

9007. (*Sir J. Clark.*) To whom would you attach this general officer of health ? to the chief medical officer ?—He would be attached to the quartermaster-general's staff ; but to make it work well, he ought to be subordinate to the principal medical officer, yet so far independent as to correspond directly with the Commander of the Forces, and Secretary-of-State for war, giving copies of the same to the principal medical officer for his information.

9008. (*Dr. Sutherland.*) Who would decide, supposing the sanitary officer was of one opinion and the principal medical officer was of another opinion ?—The general officer commanding.

9009. (*President.*) Would not the general officer commanding-in-chief follow the opinion of the man who he thought was the better qualified to give an opinion ?—Certainly, he would follow the opinion he considered best.

9010. (*Mr. J. R. Martin.*) The sanitary officer having a special function ?—Yes. If the sanitary officer reported so and so, and the principal medical officer forwarded his opinions on that report to the commander of the forces, the latter would decide and order so and so to be carried out.

9011. Does not it accord with your experience that there is much good will and disposition to forward the general purposes of the army among all classes of officers, and that clashing is very rare ?—Yes ; the object with all is, or ought to be, to work for the good of the service.

9012. (*Dr. A. Smith.*) Is that practically the case? —I think so, only you will find that military officers do not always hold the same views with regard to sanitary or other matters as medical officers do.

9013. (*President.*) Do you contemplate making the staff of the department of the director-general removable after an interval of so many years ?—I think it would be but fair that they should take their fair turn of foreign service ; they might hold it for five years or so.

9014. You are aware that by regulation the quartermaster-general and the adjutant-general serve only for five years ?—Yes, both at home and abroad now ; they are removed every five years.

9015. Would you extend that ? would you say that of all medical appointments, and that the director-general should only serve for a limited period ?—No. I think that the director-general should remain for a longer period ; but all other appointments should be for five years only.

9016. (*Dr. A. Smith.*) With reference to removing the staff of the director-general after a given time, do you think that, though that might be very agreeable and perhaps just to the officers of the department, it would not be highly detrimental to the service ?—No. I am of opinion that in a couple of months, or less, any man could make himself conversant with the duties of any office.

9017. (*President.*) Do you not think that in other offices the introduction of new blood is very useful ? —Yes, always, and I think it would be very advantageous for the medical department.

9018. Do not the same men get wedded to the same systems if they serve too long ?—Yes, quite so ; and if rules and regulations were published, as I have already suggested, and which are really necessary, it would be all plain sailing, and very satisfactory to the department.

9019. (*Mr. J. R. Martin.*) Every officer would be well informed as to what he might expect in the service ?—Yes; I think if you published the regulations, clearly defining the duties, &c., required, you would not have one letter for 50 that you now receive.

9020. (*President.*) Do not you believe that every change almost, whether it is the Commander in-Chief, the adjutant-general, or the quartermaster-general, has generally produced some improvement ?—Yes, you get into an old routine system, and any change must be far preferable to such a state of things.

9021. (*Mr. J. R. Martin.*) But the change after five years you would not make imperative; you would allow the government to continue an officer for five years more ?—Yes, he might be reappointed under particular circumstances ; still, as a rule, I would hold to five years tenure of office.

9022. (*President.*) With power to re-appoint ?—Yes, they can re-appoint if they choose, as at present in the military staff appointments.

9023. (*Dr. A. Smith.*) In one of your answers, with reference to the different ranks of the department, you mentioned that for getting rid of staff surgeons of the first class, it would probably be necessary to increase the number of deputy inspectors by six. As matters now exist, there are at all events Hong Kong, New South Wales, Bermuda, the Channel Islands, Portsmouth, Plymouth, Mauritius, the Ionian Islands, Malta, and Jamaica. Those are stations where deputy-inspectors are not quartered, but where

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staff surgeons of the first class are stationed, as it is necessary to have officers of a certain standing to consult and advise the general officer commanding. It would be necessary to add to the deputy-inspectors at least six or eight ?—I have counted them all up, and, excluding Bermuda, I do not think you require more than six or eight to embrace every station you have mentioned. If it is necessary for a small station like Bermuda, I do not see why a surgeon-major could not act, under peculiar circumstances, as an administrative officer. There are at present deputy-inspectors at Portsmouth, Corfu, and Jamaica.

9024. Are you aware, that such have been the necessities during the war on some stations, that we employed the surgeon of the regiment, whose length of time there had been so short when he was moved away and another came, that neither in this country nor in the command itself could matters be kept square. Bermuda was one ?—Why not keep a surgeon-major at Bermuda or other small stations, and you remedy the evil.

9025. Then he becomes an administrative officer ?—I would only make them so under peculiar circumstances. Occasionally a captain commands a regiment.

9026. You would get rid of 22 staff surgeons of the first class, and for them you would get six deputy-inspectors ?—Yes, I think that there should be only two administrative ranks, Deputy-inspector and Inspector-General, unless, as I have stated, under peculiar circumstances.

9027. (*President.*) You think that a regimental surgeon is far more important to the public service than a first-class staff surgeon ?—Yes, I do not see why a surgeon major should not be sent to a recruiting district; have charge of depôt battalions, and perform all the executive duties the first-class staff-surgeon does now.

Adjourned.

Wednesday, 15th July 1857.

PRESENT :

The Right Hon. Sidney Herbert, M.P.	Sir Thomas Phillips.
A. S. Stafford, Esq., M.P.	Sir James Clark, Bart.
Dr. Andrew Smith.	J. R. Martin, Esq., F.R.S.
T. Alexander, Esq., C.B.	Dr. John Sutherland.

President, The Right Honourable SIDNEY HERBERT, M.P.

Dr. James Brown Gibson, C.B.

Dr. James Brown Gibson, C.B., examined.

9028. (*President.*) What rank do you hold in the service ?—Deputy-inspector of hospitals. I am now at Aldershott. I am the principal medical officer there.

9029. Where have you served ?—My first service was at Chatham for about six weeks, in the latter part of December 1826 and the beginning of 1827; I then went to the West Indies; I landed at Barbados, and proceeded immediately to Demerara; there I spent eight years continuously, in charge of my regiment the greater part of the time, and sometimes of another regiment, and of the whole civil and military staff at George Town, British Guiana.

9030. After that what did you do ?—I returned to England and arrived at Cork. I found the depôt of my regiment at Cork Barracks without a medical officer, and I served with it for two months. I was then appointed to the 17th Lancers as assistant-surgeon, with which I continued to serve as assistant-surgeon until the second-class staff surgeons were made in 1841; then I became a second-class staff surgeon, and then I went to Malta.

9031. (*Sir T. Phillips.*) Were you in Ireland and England at any time ?—Yes, and in Scotland.

9032. (*President.*) Then where did you go ?—I went to Malta, and remained there two years, and was brought back again to the 17th Lancers as its surgeon.

9033. How long did you remain with them ?—Till I landed at Kulalee on the 19th of May 1854, when the expeditionary army went to Turkey. The following day H.R.H. the Duke of Cambridge informed me he wished me to live with him and showed me the room and the stables he had kindly reserved for me. Two days afterwards, on the arrival of the assistant-surgeon, I joined His Royal Highness, and was immediately attached to the Highland brigade. With it and the Duke of Cambridge, who commanded the first division, I proceeded to Bulgaria, and from thence to the Crimea.

9034. Till the Duke of Cambridge left, and then you went to Malta ?—I accompanied His Royal Highness on the several stages of his journey back to England.

9035. (*Mr. T. Alexander.*) How long were you in England ?—From 1st February to 19th May 1855.

9036. How long did you remain at Malta ?—From the first of June 1855 to the 26th of May 1856. I arrived in England on the 2nd of June.

9037. (*President.*) When were you appointed to Aldershott ?—Immediately after my return; I proceeded there on the following Monday.

9038. You had rather more than a year at Malta ? Yes; I should say that on my return, some time after, to England, when the Duke of Cambridge's health was sufficiently recovered, I expressed to Dr. Smith my readiness to return again for service in the field; I will also say that I would not have returned; I doubt that I should even with the Duke of Cambridge if it had not been for other circumstances in connection with promotion.

9039. What number of staff officers are there under you at Aldershott ?—One first-class staff surgeon and an assistant staff surgeon at present; I have had two first-class staff surgeons.

9040. The regiments at home have now two assistant surgeons each ?—Yes.

9041. Is the work better done in consequence of there being two ?—Yes, unquestionably. The general duties of the regiment must be done with greater facility and less liability to interruption from sickness and pressure in the hospital. I think that the majority of the medical officers do their work well. When the regiment had only one assistant-surgeon, I think the duty in the hospital was as well done as at present.

9042. Is there enough work in the regiment to keep in full employment three officers, a surgeon and two assistants at home ?—I think it would be advantageous to the service that it should be so; a medical officer may be sick and require leave of absence. At Aldershott

there is an orderly medical officer of each hospital, and three medical officers on duty every day as orderly medical officers, three assistant-surgeons. We have four hospital divisions, three in the south camp and one in the north camp, and in each of those hospitals there is an orderly medical officer, on for 24 hours, taking it by rotation from the different regiments.

9043. (*Sir T. Phillips.*) Would two officers constantly present be adequate to discharge the duties of the regiment?—If they were always with it and never sick—there are a great many duties to be done besides those of the hospital. At Aldershott one assistant-surgeon is necessarily detailed to attend each brigade on general and brigade field days, at rifle practice and certain regimental parades.

9044. (*President*) There is no general hospital at Aldershott?—No.

9045. Have you a system like that which exists at Dublin and Portsmouth, a number of regimental hospitals being put together?—Yes; they are a congregation of regimental hospitals, partly on the regimental system, and partly on the general system—all on one system. There is one in each division cooking, which is very advantageous, I think.

9046. That is general?—There were three regiments usually—the 88th, the 2nd battalion of rifles, and part of the 82nd, in the new hospital huts; there is only now one regiment, but the sick of one regiment; there is usually the sick of three regiments in the old union workhouse; there are the sick of these regiments in block 3, in the south camp, and there are the sick of eight regiments in the camp. In each of those divisions there is one common kitchen.

9047. (*President.*) That is like a general hospital?—Yes, because the purveyor sees to the cooking for all the sick in each division.

9048. In what respect is the system regimental?—In every other respect with the exception of there being general pack-stores.

9049. Do you think it is a good system?—I think it is a very good system.

9050. Do you like it better than a general hospital?—Infinitely.

9051. Why?—Because the regimental system is very good.

9052. So is the general hospital for its purposes?—Yes, but in Aldershott such is the state of things, that the medical officers are acquainted, both with the duties of a regimental hospital, and they become acquainted with the main workings of a general hospital.

9053. How do they become acquainted with the main workings of a general hospital, if there is none there except as to cooking?—There is one general pack store.

9054. So far as the treatment of the sick is concerned, each man is confined to those of his own regiment?—Yes.

9055. (*Mr. A. S. Stafford.*) Is that as a preparation for war, when there must be general hospitals, does it teach the army medical department anything—you said that there were some particulars in which it was a regimental hospital, and some in which it was a general hospital?—Yes; and a very good one. In a general hospital the sick of a number of corps are placed in a series of wards without any distinction, and are attended by medical staff officers instead of regimental medical officers, and they are cooked for in one common kitchen; but they do not apply to the barrack-master for the hospital accommodation; they do not take it from him when they come into quarters, and they do not give it over to him when they leave. In strictly regimental hospitals they have a pack-store of their own.

9056. Have you served in any general hospital of late years?—No.

9057. Not since you were at Chatham?—I have been in Dublin, where there was a general hospital.

9058. That is a rule of yours, is it not, at Aldershott, an agglomeration of military hospitals?—Yes; I prefer them much to a purely general hospital but the present assemblage of them existed in Aldershott on my taking the medical supervision of the camp; when I was second-class staff surgeon at Malta I had the charge of two regiments, the hospitals of which were conducted on the regimental principle.

9059. There is no general hospital there?—No, a regimental one. Formerly it was a complete regimental hospital. Now I think the cooking is done differently.

9060. (*Sir T. Phillips.*) What were your duties at Malta?—First I was placed in charge of the 19th regiment in consequence of the absence of the surgeon. I was then in charge of the reserve battalion of the 42nd highlanders, which came from England and the other battalion from Corfu. I subsequently had the general duties of the staff, but specially I was physician to general Sir Patrick Stewart and his family, and had the general staff duties.

9061. You became a regimental officer when you began there?—I did not. I was not gazetted to the 17th lancers till about three weeks before I left Malta.

9062. And continued so for some time?—Yes; I continued to do the duties of general surgeon till I left for England to join my regiment.

9063. What were those duties at Malta?—The commissariat, head quarters staff, and all the civil officers.

9064. (*President.*) At Aldershott you have endeavoured to establish a field hospital for the instruction of junior medical officers?—Yes.

9065. What course have you taken for that purpose?—I have directed that all the trivial sick who did not require hospital diet, such as slight contusions, boils, and sprains, and trivial affections, should be treated in a hospital marquee; and I made arrangements with the assistant quarter-master general that a hospital marquee should be sent out with each corps—12 sets of bedding, viz. palliasse with straw, and a bolster with the necessary blankets and rugs a couple of camp kettles for cooking, and a kettle to boil hot water &c.

9066. In short everything complete?—Not complete, but such things as I conceived were necessary to carry out my objects.

9067. Complete for a temporary field hospital?—Yes.

9068. Did you have any difficulty in carrying that out?—Yes; considerable difficulty, and the matter has been referred to the authorities in London.

9069. You cannot carry out your experiment, as the barrack-master would not give you the necessary materials?—I have got the beds and bedding on the responsibility of the lieutenant-general, and the barrack-master issued them.

9070. In spite of the refusal of the authorities in London?—No, the authorities in London have not refused them.

9071. They have disapproved of them, but they have not withdrawn them?—No, but a verbal communication has been made to me about them.

9072. What was the communication?—That the barrack master's instructions did not allow him to issue the other articles required.

9073. Will that put an end to your experiment?—No, not until I receive an order for the withdrawal of the things. Had I not been here to-day I should have written to Dr. Smith that he might endeavour to get the things, supposing they had his approval.

9074. What is the health of the troops at Aldershott as compared with their ordinary health in barracks in England?—They enjoy a better state of health.

9075. Do you know what the per-centage is—what rate per annum?—Per diem from 4 to $4\frac{1}{2}$ per cent., taking the whole sick.

9076. What would it be in barracks?—About 6 per cent.; a very small proportion of the per-centage at Aldershott is real sick—the greater proportion is syphilitic disease.

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9077. That would be so elsewhere ?—Yes, but not to the same extent as almost every unfortunate woman about Aldershott is, I fear, diseased.

9078. What would it be if the troops were quartered in barracks in Dublin or Manchester usually ?—It varies. I believe it runs from 6 to 10 per cent.

9079. (*Mr. T. Alexander.*) Do you not include all the troops that pass through instead of remaining there for six or twelve months ?—With the exception of the regiments from the Crimea, no troops pass through Aldershott—they have all remained there for long periods, none for short periods.

9080. (*Sir T. Phillips.*) What is the shortest period? —Of the regiments that came there from the Crimea a number passed through the camp and remained but a very short time. All the winter troops remained there—they came from the Crimea. I think in February of this year the first move took place ; in fact there is one regiment still there, and that came about last July.

9081. (*President.*) I see that the average of sick, in the foot guards is a little over 4 per cent. in London ; that is about the same as your rate at Aldershott ?—It is rather less, according to my morning state that I give to the general ; it was less in the beginning. in consequence of the regiments passing through.

9082. (*Mr. T. Alexander.*) Do not many regiments proceed there, and remain perhaps for a month or six weeks, and then pass on ?—Only the Crimean regiments ; I send a daily state to the general ; there have been few changes in the Aldershott camp since ; I think that the last regiment that came was last August, since February there have been some changes; I mean to say, that throughout the whole number the daily average in my morning state has been 4 to $4\frac{1}{2}$ per cent., excepting when the regiments were passing through, then it was as low as 2 per cent.

9083. (*President.*) Now it is about the same as the average in other places ?—Yes, if 4 per cent is the average ; but my impression was it was higher. because the engineer department provide hospital accommodation for 10 per cent.

9084. (*Sir T. Phillips.*) What is the health of the cavalry ?—Very healthy.

9085. How is it with regard to the 15th hussars ? —Like the other troops, during the Crimean war, they gave a great many volunteers, effective men ; there was a large augmentation of the cavalry, and they had to recruit ; and they had to make up their number by men that would not have been taken at other times. When the war ceased they could not stand the drill, and they went into hospitals in large numbers ; the surgeon wished to get rid of them, and took them into hospital. Under other circumstances this regiment would not have had so many sick. It is now as healthy as the other troops.

9086. What became of those men ?—They were discharged.

9087. (*President.*) You say that many of the cases are not cases of sickness, that is, not of epidemic disease, but that they are venereal cases ?—Yes ; we have had a singular absence of real disease.

9088. With regard to venereal complaints, are they worse at Aldershot than elsewhere ?—No, about the average severity.

9089. Is it true that the diseases are fewer, though individual cases are more severe ?—No, less severe.

9090. (*Mr. A. S. Stafford.*) Is there less fever ?— Certainly less fever ; there are from 25 to 30 cases during the whole month, out of an average of 11,000 to 12,000 men ; the monthly number of fever cases has been from 25 to 30.

9091. (*Mr. J. R. Martin.*) What type of fever ?— Most trivial. We have only had one death from typhus fever since September last.

9092. (*Mr. T. Alexander.*) Have you rheumatism or diarrhœa ?—Very little, and there are scarcely any severe pulmonary affections. I made up a return for General Knollys, embracing the six months preceding the 21st of May. I think there were only fourteen cases of inflammation of the lungs.

9093. (*President.*) Upon the whole, you would say that Aldershott was a very healthy station ?—Extremely so.

9094. (*Mr. T. Alexander.*) It is quite a bog, is it not ?—Quite the reverse. It is a very dry sandy soil, that is the secret of it ; it is an extremely deep sand, covered with light surface earth, and when rain falls it disappears to a great depth. There is but little evaporation, and we have a dry atmosphere ; and the men being very much in the open air, inhaling a great deal of pure air, there is a freedom from disease.

9095. (*President.*) If fever is so much below the average, what are the diseases that bring the sickness up to the average of the army ?—Various forms of syphilis.

9096. If the fever is less, the amount of syphilis must be greater ?—Yes, perhaps in quantity, but not in kind ; the cases are not unusually severe.

9097. (*Sir T. Phillips.*) What has been the mortality ?—It is various in different months. In December, with the exception of a man who died in the military prison, there was only one death ; in March there was only one death among the soldiers ; in April there was only one death, and in May, one.

9098. In January and February what was the number ?—I cannot tell you that. I remember these as being striking cases.

9099. (*President.*) Can you ascertain the average for twelve months ?—I can get it.

9100. (*Mr. A. S. Stafford.*) You have nothing to do with the guards' hospital ?—Nothing whatever, except that I receive a daily state of sick.

9101. (*President.*) Do you believe that a hospital in a hut is better or more or less favourable to the health of the patient than a hospital in a masonry building ?—In a well-constructed stone building, well ventilated, and containing everything that can be made for the sick, I should prefer it. At the same time, I must say that cases have done extremely well in the hut accommodation of Aldershott, and even severe cases of disease.

9102. It has not come under your experience that men recover more rapidly in huts, from their being better ventilated, and less impervious to the air ?— That is the cause that I assign for the cases doing so well in the huts, and also for the high state of health of the men ; the latter also to the sanitary condition of the camp being well looked after.

9103. Do you remember the case of the huts near Dublin, in which the men were treated for fever? —I do. I was quartered in Ireland during the famine year, and during the famine fever that succeeded the famine I was quartered in Dublin ; there was not sufficient accommodation in the permanent hospitals for fever cases, and huts were extensively erected in various places all round Dublin ; they were very rude indeed, simply deal put up and covered with canvas. A great number even could not be admitted into those, and they were treated outside ; and I was informed, and indeed I know, that the proportion of recoveries was greater than in the fever hospitals in the stone buildings of Dublin.

9104. In your experience of army hospitals, have you known much mischief to arise from the difficulty of getting repairs effected from the delays in the engineer's department or the barrack department ?— There is a great deal of difficulty. At Aldershott I have had less of it than I have ever had in any other station. The duty there is so well conducted by the engineer's department, everything I must say is promptly done so far as in them lies.

9105. Can you suggest any way of simplifying the processes by which repairs may be effected at different stations in England ?—Yes ; at present the process is this :—I apply, for instance, or the commanding officer of the regiment or the surgeon applies to have a certain repair or a new work done. As regards new work, I should say that I wished to have blinds put up ;

there were a number of cases of ophthalmia that were brought to the camp by a certain regiment from Portsmouth, and I wished for blinds to be put up, as I had those cases separate from the other sick. Before that could be done it was necessary to write to the quartermaster-general or to the general, and through him it was then sent to the Horse Guards, and then sent to the War Department, and from the War Department it went to the Horse Guards, and from there to Aldershott to the lieutenant general again; then it was sent to the commanding-engineer, and then it was done. I do not say that any bad results accrued.

9106. It was a long process in case of so small a thing as a new blind?—Yes, I have had a female hospital established in the camp, and I wished to have blinds put on the windows, principally for decency, but in order to obtain them the same process had to be gone through.

9107. How do you propose to simplify the mode of proceeding?—By the commanding engineer and the lieutenant-general commanding having authority to grant, on their own responsibility, repairs to a limited amount without reference to the central authorities, but obtaining their sanction afterwards.

9108. Have you the purveying system at Aldershott?—Yes.

9109. Does it work smoothly?—Yes, because the gentleman who is the purveyor there is a person of very considerable tact and good feeling, who wishes to carry on the duties efficiently to himself and others.

9110. Have you known it work ill elsewhere?—I am sure that it would work ill there if he was a person of a different disposition; if he chose he might, such is the nature of the purveying regulations, give me very much trouble.

9111. He might constantly make objections and difficulties, and refuse you the things you required?—I would not allow him to refuse, and I do not think he would refuse me anything that I required for the sick; I do not think that any purveyor would do that, I would not permit him to do it; but I think if he wishes to go away, or if he has any communication to make to the lieutenant-general, that should be done through me. I should know everything that occurs in my department, and no officer under me should leave the camp without my approval and knowledge. He does not do so, because he always mentions it to me, but I understand that he might do so if he saw fit. In a rough copy of the recent regulations that have been compiled for the purveying department, I have actually read that he is invested with authority to hold independent communication on various matters connected with the department with the higher authorities.

9112. Do you refer to some very lengthy instructions that are supposed to be in preparation?—Yes.

9113. Do you think that those instructions, if carried out, would not place the purveyor on a proper footing in relation to the medical officer?—Yes, I do; and I think they would be very mischievous to the general service.

9114. (*Dr. A. Smith.*) Who is responsible for the medical staff corps serving at Aldershott not attached to regiments?—I conceive that I am; the purveyor manages the accounts.

9115. Have you on any occasion known that the purveyor has recommended a man for furlough without your knowing anything about it?—It has occurred once.

9116. And did he not consider that he was justified and had a right to do that?—That was his feeling at the time, I think.

9117. Has the purveyor on any occasion given you any reason to believe that he could act independently of you?—He has.

9118. (*Sir T. Phillips.*) Whose control does he regard himself as being under?—Strictly under the War Department.

9119. To whom on the spot does he regard himself as answerable?—For certain duties to me, and for others to the lieutenant-general.

9120. To whom would he report his intended absence?—He has been led to understand by the War Department that there is no necessity for him to obtain my permission, except as a matter of courtesy.

9121. (*President.*) He does not understand that he is an officer subordinate to you?—In part he does as to the diet of the sick only, I think.

9122. Does he himself understand that, or is he instructed to consider himself in the same relation to you that a house steward would be in a civil hospital?—Not to that extent.

9123. Have you paid a good deal of attention to the subject of the entrance of medical officers into the profession; and are you in favour of competitive examination on first admission?—Yes, both practically and theoretically.

9124. Would you exact any medical as well as surgical diploma?—I think it would be desirable that the individual should have both a medical and surgical diploma; it would be satisfactory as a proof of his more liberal education, but I would not be satisfied with that alone.

9125. You would take an examination afterwards?—Yes.

9126. Would you include any test of a liberal general education?—I would.

9127. To what extent?—I would oblige a man to produce evidence of his having received a liberal education, and have him examined upon it by competent persons.

9128. Would you require anything like a bachelor's degree?—No; it would be very desirable, but is not essential, and there would be difficulty in obtaining it.

9129. (*Sir T. Phillips.*) What do you include in a liberal education?—Classics, literature, and composition, and, in fact, everything that would enable a physician to investigate disease and to write upon it.

9130. (*President.*) Would you after the examination at once give them an assistant-surgeon's commission?—No; I would send them to a large general hospital.

9131. To Fort Pitt?—Yes, for clinical observations, so that the principal medical officer there might satisfy himself that they were, as far as young professional men can be, competent to treat disease, and to perform surgical operations.

9132. Would you have any professorships for instruction in military hygiene and sanitary knowledge?—Yes.

9133. As is now done in Dublin and in Edinburgh?—Yes.

9134. Would you move those chairs into the hospital?—Yes, I would.

9135. Supposing that the invaliding was moved from Fort Pitt, you would I suppose move the whole of the establishment, the medical school of the army, from fort Pitt to whatever hospital takes its place?—Yes.

9136. That would be to Netley?—If there is no other large establishment, they must of necessity be moved to Netley; but I think it is essential for the medical department of the army, and for the interest of the sick soldiers in the country, that there should be a large military hospital in the vicinity of London.

9137. Why?—For several reasons; the first is, that medical officers would, if doing duty in that hospital, have the advantage after their own duty was over, which is always early, of attending the large hospitals of London, and hearing lectures upon professional and collateral sciences which it is necessary for them to know. They would have that advantage, and also the advantage of associating with the higher classes of our profession in London. I have always found the chief surgeons and physicians extremely glad to see medical officers of the army, and very kind to them in imparting information. It would also be a gain in having the assistance also of the eminent men of the kingdom

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who are in London in any interesting or difficult cases either of surgery or medicine.

9138. Would you have a general hospital in or near London, in addition to the invaliding hospital at Netley, or do you think that the invaliding hospital at Netley should have been built in or near London ?—Since I first heard that there was to be a hospital built at Netley, I thought that it was an unfortunate selection of a site for it.

9139. That it was removed too far from the great civil schools ?—I think that the site is not a good one, it is on the bank of a large tidal river ; there is a large surface of offensive mud exposed at low water, and on each side of it there is marshy ground.

9140. Are you acquainted personally with the site ? Yes. I have visited it, and looked at it very particularly.

9141. (*Dr. A. Smith.*) Where is there marshy ground ?—On both sides ; there is a wet meadow between it and Lady Webster's grounds now being drained ; it is intersected at this moment with trenches to drain it, and on the other side as we approach it from Southampton is all along at intervals on the right hand side with flags &c., growing in it.

9142. (*President.*) You do not apprehend that Netley, though in a relaxing climate, is more unwholesome than Southampton or the adjoining country ?—I think that Southampton is not a good climate for the class of cases that would be in that hospital. The great majority of sick there, if it is to be as Chatham has been, would be invalids from the East Indies, Ceylon, and the Mauritius, and all our tropical possessions, and they want a dry, warm, bracing climate.

9143. Are they not almost contradictions—most bracing climates are cold ?—No, I think not ; it depends upon the extent to which you carry the term. I think you may in a modified form combine both. Among medical men we generally believe that the vicinity of a large river is a damp place. When I leave Aldershott in the winter it is beautifully clear, but when I come to London there is a dense fog. In Sydenham it is a dry soil, a dry gravelly chalky soil, highly situated, with a beautiful aspect, and it would afford the sick the immense advantage of the Crystal Palace.

9144. Are you aware that the site of Netley Hospital is on a bed of gravel ?—Yes.

9145. Can you have a better or a drier foundation ? —No, and if everything else was combined it would be better, but the bed of gravel I think is not more than a certain depth, and then it is thick clay underneath, which is the cause of the ground on each side of it being marshy.

9146. It has been stated before this Commission by an engineer officer that they have dug down as low as 30 feet without coming to the end of the gravel ?—And without getting good water either, where they are now boring, which I was informed is about 130 feet deep. The gravel is on the surface, and then they come to clay, and then it is presumed that there is chalk under it.

9147. The fact, as stated by the engineer officers, that they have bored through to 30 feet without leaving the gravel, militates against your statement ? —Yes, but I was there on Sunday last.

9148. You did not go down to 30 feet ?—No, but I saw a bit in the cutting—it is exposed.

9149. Where the ground has been excavated for the building you saw clay under the gravel ?—Yes, I saw the strata.

9150. (*Dr. A. Smith.*) Where did you find clay there below gravel ?—In that cutting.

9151. Or sand ?—Clay.

9152. Not the green sand ?—My impression was that it was clay, and it was the impression of the men about that it was clay. My impression was that there was about five or six feet of gravel, and everything else below the surface was clay.

9153. After a probationer has passed a certain number of months in a large military hospital, do you contemplate giving him another examination to see whether he has taken advantage of the lectures that had been offered him there ?—Yes, I think so. On those things and the collateral branches of military hygiene. Personal observation alone is the only certain and safe test of clinical knowledge, that is the actual treatment of disease, and that cannot be obtained by any examination, I think.

9154. Then you would recommend that after that examination, if he passed it satisfactorily, he should have his commission as assistant-surgeon ?—Yes.

9155. Would you give him any further examination in after life ?—Yes ; I think that at every stage that a medical officer passes through, up to that of deputy-inspector, he ought to undergo an examination.

9156. You contemplate that being a standard examination, not to affect the order in which a man should go up from one rank to another—you would not let a man who passes a higher examination pass more quickly into the rank above than the man who passes a medium examination ?—Certainly not ; I would have all properly qualified.

9157. Do you confine these remarks to the promotion to the rank of surgeon ?—No ; I would examine an assistant-surgeon before he became surgeon, and I would examine a surgeon before he became a first-class staff surgeon.

9158. What kind of examination would you give to a surgeon who would be a man of some standing, who had been practising his profession, and had acquired much experience ?—A higher degree of knowledge is expected from a man who has been 10 or 20 years in practice.

9159. Though he might have much higher practical knowledge, might it not be of a character that would not show as well upon examination, as in the case of young men fresh from the schools ?—Yes ; but in this large hospital, if it were in the vicinity of London, there would be an opportunity of testing his positive clinical and practical knowledge, both in medicine and surgery.

9160. (*Sir T. Phillips.*) Would you send him back to his anatomy and physiology ?—Yes, I would, and I think it would be a great advantage.

9161. (*President.*) Do you propose to give any leave for the purpose of studying in civil hospitals ?— If it be impracticable to have a large hospital establishment in the vicinity of London, I think it would be very desirable to give leave of absence for such a purpose.

9162. (*Mr. J. R. Martin.*) Would you have a roster of duty for the colonies so that medical officers might come home periodically to enjoy the advantages of study ?—Yes, every five years. I would have every medical officer return to England ; he should not be absent longer than five years.

9163. (*President.*) Do you contemplate a roster for all foreign service ?—Yes.

9164. Advertise so that the officers should know what their prospects are ?—I do not know that the public press would be the right place, but I think there ought to be a code of regulations for the department, or it should be communicated to them by the director-general.

9165. Have you any suggestions to make on the subject of the rates of pay now received by the medical department ?—I think that the rates of pay ought to be increased in all the grades.

9166. You have seen, I daresay, the different scales which have been put forward, one by some medical officers in the Crimea, and another by the director-general in the appendix to Mr. Stafford's committee ? —I have not read it.

9167. Have you any scale of your own ?—With the exception of that in a recent number of the Army and Navy Journal, the only scale that I have seen is one that was sent to me from Chatham, and printed. I do not think that I have read it through.

9168. Have you any written scale that you can put in ?—The scale that approaches most to my own view, with some modifications with regard to the assistant-

surgeons, and to which I have referred, is the one that was published in a number of the Army and Navy Journal.

9169. The assistant-surgeon now has 7*s.* 6*d.*, what would you give him ?—Ten shillings.

9170. With any rates of increase after a certain period of service ?—Yes, after ten years ; my idea of an equitable scale is something comparatively with what an individual of the highest class would gain in civil life.

9171. A man in civil life, if a very clever man, sometimes gets 10,000*l.* a year ?—Those are the exceptional cases ; it is essential to provide a young medical man without income with money ; they cannot commence in civil practice without money, and in the army it is essential to give him the means at first.

9172. Would you take into consideration the average number of young men in civil life who attempt to obtain practice and never succeed in getting any ?—To a certain extent I would, but if we admit men of that grade into the military department in the army, which we ought to do, it is essential for their position as gentlemen that they should receive sufficient means to keep up their position.

9173. Do you take into consideration that in the army service an officer is lodged, and the civil practitioner has to lodge himself ?—Yes.

9174. How do you ascertain the average of the civil profits ?—Being in a cavalry regiment, I have moved throughout the towns of the kingdom in England, Ireland, and Scotland, and I generally became acquainted with the medical practitioners of the towns in which I have been quartered. And a medical man must have means in some way ; he must either have an income, or have money to buy a practice; and if he has means, in the course of four or five years he will be earning an income of 200*l.* or 300*l.* a year at least.

9175. But you would give an assistant-surgeon 200*l.* or 300*l.* a year at once ?—200*l.* a year is, I think, essential.

9176. You give him a little more at first entry to secure to him the means of maintaining himself respectably, and then you would give less in the other ranks ?—I do not think it is possible for an assistant-surgeon to live in the army as a gentleman without always being in difficulties, and using the most rigid economy, upon less than 10*s.* a day.

9177. With 10*s.* a day, what do you consider an assistant-surgeon's position is worth to him ?—Though his actual expenditure in barracks may not consume 10*s.* a day, his regiment may be on the march, and there is the wear and tear of clothes, &c., so that it would be a mere maintenance to him.

9178. What do you think it is worth to an assistant-surgeon ?—The accommodation that an assistant-surgeon gets would not be worth more than 5*l.* or 10*l.* a year ; he has only a single room.

9179. He has two, has he not ?—No.

9180. You would take into consideration the prospective pension ?—Yes ; but if he were a civil practitioner, a gentleman of high education and competent to practise, and had spent his life up to 60 or 65 in his profession, I should expect from the time he had been 35 years in practice he would have accumulated a fortune, the interest of which would be much greater than any retiring allowance a medical officer is likely to receive ; his practice would have been so great, I think he would have realized money.

9181. From your practical experience in country towns, do you think that many practitioners reach 1,000*l.* a year ; I do not speak of towns like Birmingham ?—I think Northampton is a fair average town, and I knew the late physicians Drs. Kerr and Robertson most intimately ; Dr. Robertson is a man both in civil and professional life of the very highest standing and integrity, and he told me that some years ago, for many years, his practice had been worth 2,500*l.* a year, and one year it was 3,000*l.*

9182. Are there many other practitioners in Northampton ?—Dr. Kerr also.

9183. And others ?—Yes, and all realizing considerable incomes.

9184. Putting them all together, dividing the income among them, would they have as good an income as a deputy inspector, including his lodgings and including the prospect of a pension ?—I do not think that is a fair case to put ; we suppose that a medical officer has the highest attainments necessary for success, but there are a number of practitioners in every town who do not possess those attainments.

9185. You have, in considering the rates of pay in the army, the advantage of certainty ?—Yes.

9186. Do you consider that your preliminary competitive examination would exclude from the army all those who were unfit to obtain practice if in civil life ?—Yes ; and I think that all the persons whom we would obtain under those circumstances would, other circumstances concurring, having an income, or money to purchase a practice, and would attain the highest practice.

9187. Can you put in your scale of pay which you propose for each rank ?—I will do so.

9188. Does it include additional retirements or alterations in the present rates ?—Increased retirements.

9189. After what periods of service ?—After 25 years.

9190. Not 21 or 20 years ?—No.

9191. You would think them too young to retire after that service ?—I think that very few medical officers would avail themselves of it, and I think it would be disadvantageous to the service if they did, I think that the services of medical officers, after 20 years' service and upwards, are extremely valuable to the country. I think it would be a very great loss to the service, and not much gain to the medical officers. It is remarkable how few officers in health have availed themselves of the 25 years retirement.

9192. After 20 years' service, practically, most men in the service are engaged in administrative inspectorial duties, not in the treatment of the sick ?—Until very recently it was quite the reverse ; it was not until they attained 30 years' service, or very nearly.

9193. (*Sir T. Phillips.*) How long have you been deputy inspector ?—Two years.

9194. (*President.*) In what year did you enter the service ?—The 14th December 1826.

9195. Do you propose that the retirement should be compulsory ?—After 35 years.

9196. With regard to half-pay, do you propose any alteration ?—I do not think there is any such thing as half-pay.

9197. But there are the rates which are given on reduction, or which are given when officers are on the sick list ?—I think that if an officer is removed from the service from any cause, except reduction or disease, under 25 years' service, he should not receive so high a proportionate pay as the man who leaves after 25 years' or after 30 years' service. I think that those who serve up to 35 years' service should receive a proportionate allowance. If a man retires to suit his own convenience under 25 years, he should retire upon a very much less retirement in proportion than if he serves on for 25 years or 35 years. I think that his services are so valuable in proportion to the length of service up to 35 years, that he should have a proportionately large retirement.

9198. Will you include the rates of retirement in the paper which you will give in of the scale of full-pay and half-pay ?—Yes, I will.

9199. With respect to promotion, what is the present rule as to promotion in the lower ranks from assistant-surgeon to surgeon ; is it governed by seniority or selection ?—I think on stations it is done by seniority ; and not only the rule but the practice has been so on the stations ; and assistant-surgeons, in consequence of one being in Canada and another in Ceylon, have been promoted over the heads of each other.

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9200. Is the practical result to give men pretty nearly their turn of seniority according to the Army List, or does it operate very unequally ?—Promotion has been very slow in India ; assistant-surgeons in India have been long in getting promotion, consequently those on other stations have gone considerably over their heads, I think—I cannot state to what extent.

9201. Some good officers get promoted from assistant-surgeon to surgeon after 6 or 7 years, and some are 10 or 11 years before they are promoted ?—I should think that 10 or 11 years in India is very common for assistant-surgeons.

9202. With regard to the rank from surgeon to first-class staff surgeon is that by seniority or by selection ?—According to the director-general's evidence in the committee of the House of Commons last year I see it is by both.

9203. Sometimes by seniority and sometimes by selection ?—Yes.

9204. The fact of a senior being taken does not prove that it is not selection ; you may select a senior as you might select a junior ?—Yes, entirely so ; the motive no one knows but the director-general.

9205. You are of opinion that seniority ought to be maintained in the rank from assistant-surgeon to surgeon ?—In every grade throughout I do not think that it ever ought to be departed from, taking care, that medical officers are qualified for the respective ranks above them by oral and clinical examinations and by giving them an opportunity of cultivating their knowledge of the profession ; whatever good men we may obtain, unless we give them an opportunity of cultivating their profession afterwards, which they have not now and have not hitherto had, they do not advance in knowledge to the desired extent.

9206. If you select an officer for administrative and inspectorial duties, duties which require great tact and command, gifts which some men have and some men have not, how would you get at that by any examination ?—It could not be got at by an examination, but only by the observation and reports of the deputy inspectors of hospitals, who are men of ability, integrity, and knowledge ; that is the reason that I would examine and have such a test of staff surgeons to see whether or not they have administrative qualities. I would expect that a regimental surgeon would be as competent to treat disease as a staff surgeon, if of equal standing, he being examined and having the opportunity of attending a large hospital, and of having access to the periodical and other press of the country ; but he may have all that, and be a most excellent surgical and medical practitioner, and yet possibly be, as you have suggested, deficient in administrative capacity.

9207. How would you ascertain that ?—By his being under an inspector or deputy inspector who could ascertain that.

9208. That comes to selection, does it not ?—No.

9209. (*Mr. T. Alexander.*) If he did not possess the necessary qualifications, what then ?—I would remove him.

9210. (*President.*) Is not that selection ; you do not call it seniority ?—Yes, I do. I think that the director-general, with regard to a staff surgeon or any administrative officer, has the means of knowing what he is as an administrative officer ; I think, with regard to a regimental or assistant surgeon, he has not the means of knowing their merits, but as to administrative officers he has, particularly if they are serving in England at any station of importance, as they must be in constant communication with him, and he will find out very soon whether they possess those administrative qualities which they ought to possess.

9211. You having ascertained, that of two men who stand first and second on the Army List, No. 2 has got those qualities, and No. 1 has not, what would you do then ?—I would remove No. 1.

9212. Where ?—I would place him on half-pay.

9213. And take No. 2 and promote him to be a deputy inspector ?—Yes.

9214. Is not that selection ?—No, not strictly so.

9215. (*Sir T. Phillips.*) Would it be just to remove a very good executive officer because he does not happen to possess administrative qualities ?—I think that the service requires it.

9216. The service requires that you should retain him in the executive rank ?—I think that he would feel himself degraded, and that his usefulness would be taken away from him.

9217. (*Mr. T. Alexander.*) Then you ought to let him retire of his own accord ?— Yes ; I think it could be managed.

9218. (*Mr. J. R. Martin.*) Is not that done in all other promotions in the army ; are not commands and staff appointments conferred upon the ground of character, rather than upon the ground of seniority ?—In the two branches of the service which are the most accomplished, the members of which hold the highest rank in intellectual attainments and efficiency, who stand the highest in social and harmonious feeling to each other, the rule is promotion by seniority, and is never departed from,—in the artillery and engineers.

9219. Is it not very much complained of as constituting a dead sea of seniority, and does not that cause the officers to be too old by the time they arrive at a command ?—No ; I think that the new system of promoting officers to a higher grade, after three years' service, will remove in time that disadvantage to the service.

9220. (*President.*) Does not that system pass a lieutenant-colonel, who has the good luck to obtain a command over the heads of all the lieutenant-colonels who have not ?—Yes.

9221. Is not that a way of getting some young men up into the senior ranks of the army while they have the vigour and energy of youth about them, and does not the service gain by that ?—Yes ; and I think for that very reason it should be carried out to its full extent.

9222. It is only by passing one man over the others that you can keep them young ?—It is only a question of the country paying a little more to induce the older officers to retire.

9223. (*Sir T. Phillips.*) Would you choose the commander of an army by seniority ?—I think that if the contemplated alteration in the education of officers is followed up, every officer who becomes a lieutenant-colonel will be fit for command, and I think that the exceptions will be few.

9224. You know that there are many men possessed of the very highest qualities, and others possessing them in an inferior degree—would you take the inferior man because he was senior ?—I assume that if it is possible to educate the officers of the army so as to fit them for command, there are always means of finding out whether an officer is fit to command or not without doing injustice to an individual.

9225. (*President.*) If you took 50 young men by chance, and gave them all an excellent education, would it follow that the man who stood first in seniority would be the man who had taken the best advantage of the education and be the ablest man ?—I think that it ought not to be discretionary with him to take advantage of it. I would force them to take it, and let them all pass through a compulsory education.

9226. Do you think that any amount of education can equalize the intellects of men ?—Certainly not ; but I do think that an individual who is so deficient in capacity as not to be able to take advantage of a proper system of education, should be removed from the service at an early period of his service. If having the capacity, he does not avail himself of it through idleness, I do not think it is any injustice to remove that man.

9227. (*Mr. T. Alexander.*) Are not some men not fitted for command, and others again who are afraid of responsibility ?—They are quite unfit.

9228. Therefore should one of those men become a senior, would you place that man in a position for which you know he was not fitted? Supposing a lieutenant-colonel is unfit for the command of his regiment, is it right that that man should be allowed to continue in the command of his regiment?—I do not think that it would be right; that commanding officer might be placed in a most dangerous position, and the whole fate of an army might depend upon him.

9229. (*President.*) Is not that a reason for selecting the very best man for the post; take, for instance, the general commanding an army, everything may depend upon him?—If you remove incapable lieutenant-colonels you will have efficient general officers.

9230. Would you get in that way a body of men every one of whom would be equally fit for that which requires the highest civil and administrative qualities of any post in the world, that of a general commanding-in-chief a large army?—Yes, I would, if the thing is carried out in its integrity.

9231. How many commanders of military eminence should you say that this country has ever produced, would you say half a dozen?—I think that we have had a great many men who have never been tried.

9232. Do you think that there have been many men who were equal to the Duke of Wellington or the Duke of Marlborough?—Yes, I do.

9233. (*Mr. J. R. Martin.*) Are you aware that in the Indian army, where all the promotion is rigidly by seniority, the commanders are never appointed there upon the principle of seniority, but always on the principle of selection?—I am not aware of that.

9234. You are advocating what you consider to be the interests of your department in urging the seniority principle of promotion, are you not?—I am advocating what I think would benefit the department and the public service.

9235. Does not promotion by seniority lose all view of the welfare of the soldier?—I think not, if you take care that every surgeon of a regiment is an excellent surgical and medical practitioner.

9236. (*President.*) How would you supply the inducement to exertion which selection for merit gives if you adhere to the rule of seniority?—In the first place, by professorships in the military hospitals; I would have those only for five or ten years, so that it might embrace a large circle of usefulness. I would have appointments to staffs and to regiments in India for men who particularly showed conspicuous merit. I would have the surgeons of cavalry regiments in this country appointed in the same manner, and give all strictly government medical appointments to the most meritorious officers.

9237. Such as what?—Such as the appointments to the civil prisons under the patronage of the government; and officers of health, &c., I would have all the medical appointments under the patronage of the government—of course there is nothing that one has a right to—I mean that we have no claim for anything beyond the will of the government; but I do think that a military medical officer, if there is such a thing as right, is the person who has a right to all government appointments, and that civil medical men have a right to all corporation and county appointments.

9238. You would reward the military medical profession by giving them situations out of that profession in civil appointments. You would reward a man by taking him out of his profession?—No, you would keep him in it; if a man after 25 years' service has served the country with great advantage, he should be allowed to retire in that way, and would still continue in his profession and in usefulness to the public.

9239. You said that after 25 years' service a man is unfit for further service and must be retired?—I have not said that.

9240. I think you said that after 25 years' service you would give him optional retirement?—Still I would rather that he did not accept of it. I think that it would be a great loss if a good medical officer retired until after 35 years' service, unless from damaged health. From the time that we embark in the medical profession until we die we are never perfect in it. If we live 100 lives the more we are engaged in duties the better we are.

9241. Would you put a man as a reward in a post where he has less to do, say in a cavalry regiment?—I would put a man who had shown a taste for his profession in a position where he might cultivate it still further; he should be a cavalry surgeon, as he is the only medical officer in the army who has a real opportunity of cultivating his profession.

9242. (*Sir T. Phillips.*) For what purpose should he cultivate his profession, to do less work, or to go back into an infantry regiment?—For further promotion in his turn.

9243. (*President.*) At present I understand that a cavalry medical officer does not receive promotion?—That has been the rule. Since the commencement of the war cavalry surgeons have.

9244. You received promotion direct from a cavalry regiment?—Yes, but not till I went to Turkey. When I returned to the 17th lancers that regulation was not in operation, or if it existed it was not acted upon. For some years cavalry surgeons were promoted from cavalry regiments. I was at Malta when I was gazetted to the 17th lancers. I did not apply for it, the regiment applied for it. I never entered into any arrangement to forego my promotion. I was offered promotion afterwards.

9245. (*Mr. T. Alexander.*) According to your statement of services you say that from 1826 to 1854 you had 18 years' home service?—From 1826 to 1835 I was in the unhealthy colony of Demerara, and the subsequent year in Barbados. In consequence of the frequent illness and removal of medical officers from disease, I was several years in charge not only of my own regiment, but of the whole of the civil and military staff, with 300 military labourers, a company of the 1st W. I. regiment, and a detachment of the royal artillery, as well as the 86th regiment for nearly a year, and I have received letters of thanks and approval from the medical board, and from all my medical and military superiors.

9246. (*President.*) As deputy-inspector at Aldershott do you make reports of the officers under you? Yes, in this way. My instructions are, in addition to my casual visits to the hospital, to make a formal monthly inspection of each hospital, and at the end of the inspection fill up a return for the director-general, stating the condition of the hospital, the condition of the books, and the condition of the kitchen.

9247. Do you make confidential reports of the characters of the officers under you?—Never.

9248. Not in case of misbehaviour?—Except any remarks in the return.

9249. Is that an open return?—Yes; I never made a confidential report of any man since I have been at Aldershott; there was an officer in the camp who set aside my authority, and I reported him to Dr Smith. I reported him to the lieutenant-general in the first instance.

9250. Did you communicate to him that you had made a report against him?—I told him that I would do so.

9251. (*Mr. Stafford.*) What is the matter with the water at Aldershot?—As to wholesomeness it is exceedingly good, but as it passes away through a stratum of clay and green sand, impregnated with iron, it tastes unpleasantly and smells unpleasantly. Several of the wells do, but it is very wholesome. Last year there were very few severe bowel complaints there, although they were very severe throughout England.

9252. Do you get your water from Cæsar's camp?—The south camp in part is supplied from Cæsar's camp.

9253. (*President.*) That is fine water, is it not?—Essentially fine, but often it is muddy and turbid.

9254. (*Mr. A. S. Stafford.*) Are the wells dry?—Not entirely dry; the north camp is entirely supplied by wells, for there are no tanks or reservoirs.

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9255. (*President.*) Have you ever contemplated the necessity of appointing a sanitary officer to an army in the field? — Yes; I would have the principal medical officer of each division responsible for the sanitary condition of his camp; of course the inspector-general in charge of the medical department in the field is the responsible person, but under him I would have other officers.

9256. That is the present system?—Yes.

9257. You do not contemplate any change in that?—No, none can be better.

9258. Under the present system do medical officers consider that they are bound to look into all sanitary questions and give their advice to the commanding-officer, and do commanding officers consider that they are bound to take it and to follow it?—I do consider that it is their duty; they are quite competent to do it and they do do it, but commanding-officers do not always pay attention to them, and even higher authorities do not carry out their wishes and meet them with that promptitude that they should; I think that it would be attended with great inconvenience in England to have civil sanitary officers attached to the army. In the Crimea the army was placed under peculiar circumstances; but in the actual movement of an army in the field, I think that if there were one hundred sanitary officers, the chief officer of a division should have power to look to that.

The witness withdrew.

Francis G. P. Neison, Esq.

Francis G. P. Neison, Esq., examined.

9259. (*President.*) I believe you have had great experience as an actuary?—Yes.

9260. Have you turned your attention very much to the subject of the comparative rates of mortality, in different occupations and classes?—Yes, I have given a very great deal of attention to it.

9261. Looking at the examination of recruits by the surgeons, who reject every man with any sign of infirmity or incipient disease, do you consider that the soldier is a picked life?—I think that they ought to be picked lives. There is a return of the recruiting department which bears very markedly upon that question. I find this very significant result in the return of the recruits examined in the years 1837 to 1842, five years, that out of 93,652 enlistments as many as 26,768 had been rejected in all as unfit by the district staff surgeons.

9262. (*Sir T. Phillips.*) Does it appear that they were rejected for physical unfitness?—Yes, the various causes are assigned in this return, and 25 per cent. of the whole rejections are from causes that may be assigned to chest affections.

9263. Does that at all represent the proportion of the population affected by chest disease, so far as there are any means of forming an estimate?—It is not so high a proportion as those that are found in the public generally at the same ages, and obviously it would be so, because the markedly diseased would not present themselves for enlistment.

9264. (*President.*) The rejections do not give the numbers of the population in proportion, as diseased men would not offer themselves at all as soldiers?—Certainly not; those are rejected by the district staff surgeons only, but they are provisionally inspected prior to appearing before the district staff surgeons; and having passed in the sub-districts they are sent to the district staff surgeons for examination and are rejected; more than this number might be rejected provisionally; for instance, in a small village, if an enlistment takes place, there is a medical officer there who provisionally inspects the recruit, and if not rejected he then goes to the district town, say to Bristol, to the district inspector and there he is enumerated, and is returned in the list I have referred to, but the provisional rejections are not noticed at all.

9265. They will be plus the number that you have given us?—Yes; it appears to me that there is a large amount of sifting in order to have men esteemed well fitted for the service.

9266. (*President.*) Is there not another process that ought to tell upon the rates of mortality of the soldier, which is the weeding out that takes place by invaliding weakly or sickly men?—Yes, that ought to tell on the residue.

9267. *Cæteris paribus* at first sight you would say that a soldier's life ought to compare more favourably with other classes and trades?—Yes, I should be prepared to expect that.

9268. What class is the soldier drawn from?—Chiefly from the agricultural labourers and the population of small towns—not of great towns.

9269. How do those classes from which he is drawn stand as compared with the rest of the population; are they a healthier or a less healthy class?—They are a healthier class; I now understand the question to be how do the districts out of which the soldier is selected stand to the average of the whole community. He is drawn from a class that is healthier undoubtedly.

9270. The soldier is provided by the government with food, with lodging, with clothing, and in case of sickness he is at once treated by the government, and therefore he is better off than the average of agricultural labourers?—Yes.

9271. He is in the same position as a labourer if he was a member of a friendly society?—Yes, as nearly resembling the conditions as possible.

9272. How will the soldier compare, judging by the rates of mortality, with an agricultural labourer being a member of a friendly society?—With regard to agricultural labourers members of a friendly society, there is one simple form of answering the question; for every death taking place among agricultural labourers who are members of a friendly society $2\frac{8}{10}$ would take place among the army generally. (*See App. No.* LXXI.)

9273. (*Sir T. Phillips.*) At what ages are you assuming?—I am taking the precise ages as given in page 31 of the blue book on the health of the troops, taking the precise distribution of ages as given there.

9274. (*President.*) You take males of the same age as those represented in the army statistics as being the ages of soldiers serving?—Precisely; there is another point of some importance to observe in making a comparison, that is it would not do to assume a period of life from 20 to 40 years of age, there are a few men below and a few above these ages, for you have an undue proportion of the whole number nearer 20 than 40, and the average mortality would not fairly apply. I have taken the precise distribution as it appears in the army returns; in fact, I have shown in detail how the results are affected at each term of life; it will be seen not only for the aggregate result but for each particular period of life; of the whole results—for each death taking place among agricultural labourers members of friendly societies $2\frac{8}{10}$ deaths will take place among the soldiers, or otherwise for six deaths in one thousand agricultural labourers there will take place amongst one thousand soldiers similarly distributed, in the infantry $17\frac{8}{10}$.

9275. The agricultural labourer who is a member of a friendly society must be a provident man, and being provident he is probably a sober and industrious man; his health would benefit by the moral quality that is wanting in the soldier who is put into an hospital when ill, and who is fed whether he is sober and industrious or not; can you show a comparison between soldiers and agricultural labourers, irrespective of their being members of friendly societies?—Yes;

I think it would be right to explain that it is not the moral tone or quality of the agricultural labourer that affects his mortality, but it is the social conditions that flow out of that quality.

9276. It is his moral state which affects his physical condition?—He is uniformly sober and temperate, having a fair allowance of food, and being tolerably well clad; but it is easy to suppose a man of the highest possible moral tone, but not possessing those conditions, who is subject to a higher rate of mortality, but the conditions which are incidental to his moral status are no doubt those which favour the rate of mortality.

9277. How will that comparison come out?—The mortality would stand thus,—for every one death taking place among the rural labourers generally, not members of friendly societies, $2\frac{1}{10}$ deaths would take place among the army.

9278. Have you put together the household cavalry?—Yes. I can give it for each branch of the service.

9279. Will you give it for the infantry of the line?—That would be $2\frac{2}{10}$ in the infantry of the line. Another way of stating the same result is, that while eight deaths in 1,000 take place in the agricultural labourers, not being members of friendly societies, $17\frac{8}{10}$ take place in the infantry of the line.

9280. But then a soldier is generally quartered in towns, and his duty, though it is out of doors, does not occupy much of the day; how would he compare with the classes in towns whose occupations are out of doors?—Taking the same mode of comparison, still with those not members of friendly societies, and taking occupations generally, then for every death taking place amongst the out-of-door occupations generally in towns, there would take place in the infantry of the line, as that is the great body under inquiry, forming 60 per cent. of the whole army, two deaths as nearly as possible.

9281. When you say trades in towns, with outdoor occupations, what kind of trades do you mean?—A great variety; a full list is given in notes VII. and VIII. of "Contributions to Vital Statistics." There are butchers, coachmen, college porters, constables, costermongers, horse keepers, and parties in Her Majesty's Customs. Those are the people not requiring very much exercise. Then there are others requiring more physical exercise, such as boat builders, builders generally, brickmakers, bricklayers, carriers, and draymen. In the results that I have now given, all of the out-door occupations are taken, a few are not selected, but they are all towns in England having populations of more than 5,000.

9282. A soldier's time is mostly spent in barracks, and his drill is not above two hours in the day, therefore to get a fair comparison you should go to the trades whose business is carried out but very partially in the open air?—That shows more favourably for the soldier; the mortality is higher in that class. For every death taking place amongst those classes just mentioned, namely, those partially in-door occupations and partially out, still in some towns $2\frac{1}{10}$th deaths would happen in the infantry. In other words, for every $8\frac{1}{2}$ deaths per 1,000 in those towns, you would have $17\frac{8}{10}$ths, as before, in the infantry of the line.

9283. But a soldier is subjected to night duty, which those trades are not; will you compare them with printers, who work at night?—In that case for every single death taking place among the printers, not quite two deaths would happen in the infantry of the line, or about $1\frac{9}{10}$ths.

9284. (*Sir T. Phillips.*) Does not that nearly represent the mortality of all England?—The printers are as nearly as possible the average, but still those figures are taken from independent results.

9285. By which I mean that the night occupation does not appear to have really affected the value of life?—I think that that might be shown.

9286. (*President.*) The printer works under cover, and is not exposed as the soldier is to the inclemency of the weather. Take a policeman, who does eight hours' consecutive duty for seven nights in a week during eight months, and show what the comparison is with him?—As to policemen, for every two deaths taking place in the infantry of the line, it would be one for the policemen, but taking the average of the whole of the troops, it would be different.

9287. The deaths per 1,000 of policemen being how many?—About 9 in 1,000.

9288. As the policeman on the average serves but five years, and is then got rid of by invaliding and resignation, it is not a fair comparison with the soldier who serves for 14 years. Can you compare the policemen with the infantry of the line in the first five years of service, dating from the age of 20?—That can be done. It happens that the mortality of the infantry of the line at the time of life now alluded to, 20 to 25, is precisely the mortality of the average.

9289. Then there is the advantage to the soldier of his being younger by five years. How would it be if you compared the policeman with the soldier between 25 and 30?—There is also a somewhat unexpected answer to that. The data from which I have drawn these deductions refer to the experience of eight years, from 1830 to 1838 of the police, and then his average age at admission was $28\frac{1}{2}$ years, which is as nearly as possible the average age of the troops, so that so far the comparison was similar in that respect. But from a recent return for the last five years of the metropolitan police, I find that the average age on admission, from the year 1852 to 1856, has been about 24 years. Younger men are admitted than formerly, and coincident with that there has been a slight reduction in the mortality. The mortality during the last five years has not been quite so great as in the first eight years, and that difference is just about the difference that would, under a normal state of things, be due to the difference of age; but instituted as a comparison, in the manner suggested with the soldier, it does not alter the result.

9290. The soldier from 25 to 30 gives about the same rate as the policeman?—No, it is still double; the mortality at that period of life and the average of the whole is just the same.

9291. Will you compare the soldier with the miner working under ground by shifts day and night?—Then in that case, for every death taking place amongst the miners, $1\frac{7}{10}$ths would happen amongst the infantry of the line, or in other words, $10\frac{3}{10}$ths would be the mortality per 1,000 of the miners, whereas it is $17\frac{8}{10}$ths in the infantry.

9292. You speak of the troops in Great Britain?—No, in Great Britain and Ireland.

9293. (*Sir T. Phillips.*) Does that apply to the mining population of Great Britain, or to the mining population of any particular districts of Great Britain?—I have excluded from it the Cornish miners. I have taken the collieries and lead mines worked by shifts.

9294. Have you taken the mining population of South Wales?—Yes.

9295. (*President.*) What trade will compare on an equality with the rates of soldiers?—The only rates that can be at all compared is the class I have denominated clerks, chiefly counting-house clerks.

9296. They are the worst of all?—Yes, the worst class, except the intemperate class of the community. They are the worst that I have found in connection with a friendly society—the worst mortality of that class I am aware of. These results and some physical conditions connected with them bear in a remarkable manner upon the health of the army. I think I can show that to a considerable extent at least, the high mortality of the troops is due to the want of the right sort of physical exercise. If you follow the element of physical exercise in any class of men, you will have a better index pointing to the rate of mortality than any other. If you take occupations, the mass of them, irrespective of the exercise which

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those occupations call forth, you will find very contradictory results. For example, you will find this unexpected result, that in a great number of in-door occupations the health is much better than in out-door occupations. There is a very striking example of that, and I am not aware of anything that has appeared to contradict this view of the question not even among a very small number of observations. Take those occupations which require great physical exercise, and put them in one group and see the rate of mortality to which they are subject, and compare them with any other group requiring little physical exercise, and so far as I am aware you will invariably find that those occupations requiring a greater amount of exercise show a greater duration of life.

9297. (*Mr. J. R. Martin.*) Has not defective ventilation much to do with the mortality of which you speak?—I think not. I have materials illustrative of that very point. The average deaths among clerks are 18 in 1,000.

9298. (*President.*) Does not it go as far as this, that trades requiring great exercise in-doors will give better rates than trades requiring little exercise out of doors?—It will. The classes are enumerated in the notes I have already referred to. Notes V. to VIII. inclusive show the trades over which those observations extend. Suppose I take the expectation of life at the age of 30 as being something like a mean age for the soldier, and an in-door occupation requiring little exercise, the expectation of life at the age of 30 would be 35 years; but in an out-door occupation also having little exercise the expectation of life would be no more than 30 years. That would seem to have some bearing upon the question of mortality as a proof that good ventilation does not make up for some other quality which is possessed by an in-door occupation. But the striking difference is in the comparison at the same age with an in-door occupation requiring great exercise, in which the expectation of life is $34\frac{1}{2}$ years, and of an out-door occupation with great exercise, in which it is $36\frac{1}{2}$. It is somewhat remarkable here that the great exercise raises the value of life in an out-door occupation $6\frac{1}{2}$ years, and if the trades be looked to over which those observations extend, the distinction between little and great exercise in an out-door occupation is a much greater distinction in regard of the exercise itself than it is in an in-door occupation. Hence you find that the little exercise in in-door occupation and the great exercise have very nearly the same result, or they do not differ widely. But if you take it at other ages it would be different. In the case of those more advanced in life invariably greater exercise shows greater duration of life; but the difference between little and great exercise always being less in in-door occupation than in out-door occupation, the out-door occupation is throughout less than either of the in-door occupations, if the out-door occupation is accompanied with a little exercise.

9299. This is how you account for the low rates of mortality among agricultural labourers, who are, you may say, compared with other classes, as ill fed, ill clothed, and ill housed as anybody?—Yes; I have not the least doubt that the real solution of the greater prolongation of life among agricultural labourers, consists in the healthful exercises to which they are subjected.

9300. And the varieties of them?—Yes; in fact, every muscle of the human frame must live, and it is one of the natural functions that the muscle is to be called into action, and if it is not so, it will assume the form of disease immediately.

9301. (*Sir T. Phillips.*) You have little exercise in in-door occupation at 35 years, and great exercise in in-door occupation at $34\frac{1}{2}$ years?—That is the only place you will find where it is so. Take the age of 21, it is 41 against 42; take the age of 50, it is 20 against 21, even in in-door trades.

9302. (*President.*) Is there any marked distinction in the mortality per cent. of agricultural labourers, over the residue of the population in the same agricultural districts?—Yes; you will find, take the decennium 20 to 30 years of age, the mortality per 1,000 is 6 among the labourers in a rural district; but with regard to the residue of that district, the mortality is $8\frac{2}{10}$ per 1,000.

9303. (*Sir J. Clark.*) Including farmers?—Yes, and small tradesmen. Rural districts and villages, and places not villages, having a less population than 5,000; from ages 30 to 40 the results differ very little, the mortality being nearly in the same relation; it is as nearly as possible the same. But in the period of life 40 to 50 years of age, for 8·2 per 1,000 in the labourers of rural districts, there is 10·4 per 1,000 in the residue.

9304. What does the 8·2 become, from 30 to 40?—It becomes 6·04 per 1,000 for labourers and 8·02 for the residue, being nearly the same distinction as as for ages 20—30.

9305. It would seem, from the estimate which you have given of the expectation of life at 30, that in-door occupation is beneficial, and is an advantage. For instance, little exercise, in-door occupation, is 35; great exercise, in-door occupation, $34\frac{1}{2}$; little exercise, and out-door occupation, 30; great exercise, out-door occupation, $36\frac{1}{2}$; so that the great exercise out-door occupation is only a little more beneficial than the little exercise in-door occupation?—Yes, and there is a very ovident answer to that; the way in which the comparison is made is to show the influence of one element, that is, exercise and fresh air; the generally received opinion being, fresh air is invaluable to health, and confinement within doors is very injurious. Now that opinion, which is very generally received, I do not believe will bear the test of a strict inquiry; and I believe, that exercise is really the ruling element throughout the whole of life. If you take the in-door occupation, though the particular quinquennium now cited shows disadvantageously for great exercise, still at all the other periods of life it is otherwise. It may be stated, as ruling throughout all those results, that great exercise, other conditions being the same, will show a prolonged duration of life.

9306. Take the cotton spinners; in what class do you put them?—I have got them, they will be found in page 454, of "Contributions to Vital Statistics."

9307. (*Mr. J. R. Martin.*) Does not great exercise imply also generally the presence of pure air for respiration?—It does not always do so.

9308. It implies out-door occupation, does it not?—Yes; for example, a cabinet-maker; some might question whether that exercise was great exercise, but I have taken pains to consult the workmen themselves, and have had their assistance in making a classification, but the cabinet-maker suffers a great deal from dust and the glass-paper with which he polishes his furniture, and his air is very objectionable. The cooper works in-doors chiefly, though there are out-door coopers of another kind, but he has great exercise, and I have no doubt his air is pretty good. The place is not heated as a rule, but then there are carriers, chair-makers, coach-builders, coach-smiths, engineers, and forgemen; these are in-door occupations with great exercise.

9309. (*President.*) If you made this division, dividing all the men who take great exercise in-doors against all the men who take great exercise out of doors, the out-doors would enormously outnumber the in-doors?—Yes.

9310. Generally speaking, fresh air and exercise go together?—Yes; for example, the general mortality per 1,000, in the in-door occupations requiring little exercise, is 9·68, taking the soldiers' ages, and the corresponding mortality in the great exercise is 7·99 per 1,000.

9311. Take the class which have as much exercise as anybody, the out-door railway employés of all kinds, and porters, how do they stand, eliminating accidents?—The actual number of deaths in the

household cavalry was 134. If they had been according to the same mortality as railway employés the number of deaths would have been 99. In the dragoon guards the actual deaths amounted to 704; according to the rate of mortality among railway employés, of that number there would have been only 417. Taking the precise ages in the infantry of the line, the number of deaths was 2,823; the ratio according to the mortality of railway employés would have been 1,205. In the foot guards, the actual deaths were 820, the corresponding number according to the ratio of the railway employés would be 320.

9312. (*Mr. A. S. Stafford.*) Your statements with regard to the mortality of the army are totally independent of the number that are invalided?—Yes.

9313. They simply refer to those who have died in the service?—Yes.

9314. (*President.*) Do you know what length of time railway employés continue to serve?—Yes, I know it precisely, in this way; there is a large friendly society on the Great Western Railway, numbering about 2,000 employés; there is a friendly society on the South Western Railway, numbering about 800; there is one on the Brighton Railway that numbers about 400, and there is also a society on the North Western Railway, but the results are not known for that. On all these societies except the latter one I have been employed professionally during the last eight or nine years in re-organizing them, and one of the elements on which it is necessary to give proper advice is the rate of mortality and sickness which has happened in those societies; the societies all being instituted about 16 or 17 years ago, there is a very large amount of data collected.

9315. Do all the men on the Great Western Railway belong to a friendly society, or is it only a picked number?—Nine-tenths, but it is now made compulsory on all the employés entering the service of the South Western.

9316. (*Sir T. Phillips.*) As the result of these calculations, you would assign as one of the causes of the mortality in the infantry the want of exercise?—Yes; I think that can be clearly proved. That is my own opinion, and I have a document here which, to my mind, will conclusively show that. I was curious, in consequence of the remarks in the blue book by Colonel Tulloch and Dr. Balfour as to the presumed causes that might operate on mortality, to ascertain whether intemperance had much to do with it, and certainly I was prejudiced on the question from hearing every one say that there was a large amount of intemperance in the army, but it brings about other results as to want of the proper sort of exercise being the real cause of the high mortality. I have made an inquiry on the mortality of intemperate lives, and there are some curious results brought out, and it proves to my mind that if intemperance prevails in any large number of people you can detect it in the causes of death. In fact I consider it the best of all tests. I have been very much puzzled in taking the opinions of men of large experience in the army, some assigning one cause and some another, always differing very widely in their personal opinions as to there being intemperance or not; but I arrived at my own conclusion in this way:—Having instituted an inquiry into the mortality among people notedly intemperate, I have found that two classes of diseases rank very high, diseases of the nervous system and of the digestive organs.

9317. (*Sir J. Clark.*) You mean intemperance in drink?—Yes; the proportion of deaths from these two causes, diseases of the nervous system and diseases of the digestive organs, at ages 20 and upwards, formed 50 per cent. of the whole mortality of the intemperate lives; but in the general community, that is, in England and Wales, they form a little under 16 per cent., The nosological arrangement of Dr. Farr is taken in both instances and as a consequence of the excess in intemperate lives the ratio of deaths from the residue of causes is small; the diseases of the respiratory organs form among the intemperate group, only 23 per cent., but in the country generally the respiratory organs show 33 per cent. of all the causes of death; the number of deaths from diseases of the respiratory organs is a little more than double to deaths from diseases of the nervous system and the digestive organs in the country generally; but in the intemperate group the diseases of those organs form more than double those of the respiratory organs—exactly reversing the order. There is a curious series of results in illustration of this. The only group, in fact the only body of men with which a comparison of this kind can be instituted, are the army and the members of a few life offices, as well as the country generally, as to intemperate lives. There is a life office in Germany, the largest in the world, and they publish their experience annually, giving the causes of death. There have been an average of 20,000 lives on their books for the last 20 years. The company was formed in 1829, and grew very rapidly. There are only two other offices that publish their experience, the London offices do not do it; it is the Standard Office in Scotland, formed in 1825, but they have published their experience only since 1846, and the Scottish Widows' Fund Office, formed in 1815. The two medical men who reported are Dr. Christian for the Standard and Dr. Begbie for the Widows' Fund. In England and Wales the deaths from diseases of the nervous system and of the digestive organs, which are the types of intemperate life, is 16 per cent. of the deaths from all causes. In the Gotha Life Office, it is 23 per cent. of all the deaths. In the Standard Life Office it is 30 per cent. In the Scottish Widows' Fund Office 34 per cent.—the intemperate class being 50 per cent. It may not surprise those who are well acquainted with Scottish people a quarter of a century ago, but this shows as you leave the general community, and go into the higher classes of life which are insured in the Gotha Life Office, and as you approach to Scotland you get nearer to an intemperate type of life, and as a natural sequence you have the whole of the diseases of the nervous system and of the digestive organs increasing, and you have those of the respiratory organs decreasing in the same ratio. It appeared to me that if there really be intemperance prevailing in the army, it would be discovered in the results of those figures. I have referred to all ages of 20 and upwards, and consequently the ratios do not apply to the army, who are principally confined to the ages of 20 to 40. I have the ratios of death in the intemperate group for the soldiers' ages, and I have determined corresponding results for England and Wales, for the metropolis, and for the 24 towns which are referred to in the army report, and for the county of Kent, a rural district; and I have further found for each body of the army, the household cavalry, the dragoon guards, the infantry of the line, and the foot guards, a new ratio for the intemperate lives at the soldiers' ages which does not differ widely from the aggregate of all intemperate lives, the soldier's age being the intemperate period of life within which 50 per cent. of notedly intemperate people die from these diseases. The ratio then for the whole army varies from 11·1 per cent. from the intemperate type of diseases to about 7 per cent. Whereas in England and Wales the ratio of deaths from those diseases is 13 per cent. at the same period of life, consequently the army is a little more favourable in this respect. In the metropolis the ratio is a little over 11 per cent., in the 24 towns 10 per cent., so that the ratio in the whole army is more favourable than either the metropolis or than England and Wales; in Kent it is higher, being 13 per cent.

9318. (*President.*) The difference is not great between Kent and the others?—No.

9319. You include the towns in Kent?—Yes, the whole; it is not possible to separate them, for the registrar-general does not publish a return for the separated districts. In the army it will be found

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that the deaths from diseases of the respiratory organs are very much augmented. The average of all England and Wales for the soldiers ages is 44 per cent., and the whole deaths attributable to the respiratory organs in the army vary from 54 per cent. in the dragoons to 67 per cent. in the foot guards.

9320. (*Sir T. Phillips.*) Does the 44 per cent. apply to the same ages?—Yes, all of the same ages.

9321. You give the army as varying from 11·1 to 7, what is the meaning of the variation?—It is a different description of force.

9322. What does the 11·1 represent?—Of all the deaths that take place in the army from every assignable cause, 11·1 are due to diseases of the nervous system and digestive organs.

9323. What you call the intemperate type?—Yes; and it is very remarkable that as you descend coming from the most healthy portion of the army to the least healthy, that is, as you approach from the household cavalry, the most healthy, to the least healthy, you have always an augmented proportion of diseases of the chest. For example, in the household cavalry, the deaths from diseases of the lungs of one kind and another are in excess 25 per cent. of what I would call the normal amount of deaths from these causes. But in the dragoon guards, which are next in the order of inferiority of health, the excess from diseases of the lungs has increased to 59 per cent. In the infantry, which are still less healthy than the others, the excess from diseases of the lungs is as much as 116 per cent. Then take the foot guards, which are the least healthy of all, and the increase of deaths, beyond the normal amount that ought to take place from diseases of the respiratory organs, according to the experience of England and Wales, is as much as 173 per cent. But these results are remarkable in showing that intemperance does not prevail to a serious extent, or it would show itself in a development of those diseases arising out of drinking habits. The least healthy branch of the service is that in which the least amount of diseases which I consider a type of intemperate conditions takes place, namely, the foot guards.

9324. (*Sir T. Phillips.*) The most unhealthy portion of the army presents the fewest cases of the intemperate type of diseases, and the largest number of cases of diseases of the respiratory organs?—Yes.

9325. (*President.*) Would you not say this, that the time for the intemperate type of diseases to develop itself has not arrived, from the rapidity with which pulmonary disease acts upon those men?—I should not think that, because you will observe there is an augmented amount of diseases of those organs; but there are two ways of viewing such a result. Whatever may be the remote cause, the immediate cause of death in the army is due to diseases of the respiratory organs; but you will always find, if there be any powerful element acting against the health of any body of men, not only will it show itself in maximum in its own peculiar form, but it will so weaken the constitution that diseases of all the other organs will be *pro ratâ* increased, but not in so intensified a degree. Suppose that 50 deaths take place in the intemperate type from diseases of the nervous system and of the digestive organs, that is half the deaths, from all causes, and 22 deaths only would take place from diseases of the respiratory organs; but although 22 deaths take place out of 100 deaths from all causes, that 22 might be more than the normal number of deaths to the number of people exposed to risk, but relatively not so many as take place from other classes of diseases; and so you will find in the army returns; for example, in the figures now before me, you have an excess over the whole army of 109 per cent. of the deaths from diseases of the respiratory organs, but an excess of diseases of the nervous system of only 50 per cent., that is 1,277 deaths would be the normal amount from diseases of the lungs in the army, if it had been the same as in England and Wales generally, but the actual number was 2,675. In diseases of the nervous system and digestive organs the normal amount would have been 304, but you had actually 462; consequently you have an absolute increase of deaths in the army from diseases of the nervous system and the digestive organs. In order to see whether the army is intemperate or not, it is only necessary to show how many deaths have taken place from one cause relative to all the others, but it may happen that every one of the causes showed a maximum number of deaths; and this is accounted for by the fact that the one class of diseases, those of the respiratory organs, so weaken and deteriorate the constitution as not only to show a wonderful excess taking place from its own operation, but they so debilitate the constitution that other diseases also get intensified, but not to so great a degree as the diseases of the respiratory organs. It seems to me that this is really an important point, because this class of diseases carries away nearly the whole excess of mortality that has taken place. The actual number of deaths from diseases of the respiratory organs was 2,675 in the army altogether, in the whole ten years; the normal number of deaths would be 1,277, consequently there is an absolute increase from that cause of 1,397 deaths, or 109 per cent. by diseases of the respiratory organs only. The total number of deaths being 4,482, I have stated that of this there is an excess of 1,397 deaths, or 109 per cent. in the number of deaths from diseases of the respiratory organs; but take all other diseases in which the actual deaths was 1,807, the normal number being 1,212, leaving an excess of 595 or 49 per cent. from all other causes. Consequently, while every other cause contributed in the aggregate numerically to an excess of 595 deaths, you have an absolute augmentation from diseases of the respiratory organs of very nearly 1,400.

9326. (*Sir J. Clark.*) You seem to consider diseases of the nervous system and of the digestive organs only as a consequence of intemperance?—No, I do not mean that. If intemperance prevails in any marked degree in any body of men, it will immediately be discovered in the undue proportion of deaths from diseases of the nervous system and digestive organs the type of deaths amongst men notedly intemperate, in which the average of 16 per cent. to the deaths from all causes in England and Wales is raised to 50 amongst intemperate men, but other diseases, although prevailing absolutely in an increased ratio, are relatively not increased.

9327. (*President.*) You do not deny that drink may kill a man by pulmonary disease, but you say that in a mass of men of intemperate lives you will always see this large number of deaths attributable to diseases of the digestive and nervous system?—Yes.

9328. Would your rule apply to all ages alike?—I have taken it both ways always—among intemperate lives there is a very large excess of deaths; the diseases of the pulmonary organs were 23 per cent. of the whole, taking all ages, 20 and upwards; but taking the army age that ratio is raised to 27 per cent.; there is no doubt that intemperance does tell upon the lungs as well as upon other parts of the constitution; but the marked way in which it manifests itself is upon the nervous system and the digestive organs.

9329. (*Sir T. Phillips.*) What class of out-door occupation is there in which death from pulmonary disease is largely in excess?—I do not know any out-door occupation in which it is really in excess at all.

9330. (*President.*) In what in-door occupation?—In in-door occupation it is considerably in excess, but not largely, nothing approaching the army; I do not know anything that approaches it; among clerks it is largely increased.

9331. (*Sir T. Phillips.*) With them it is in-door confinement?—Yes.

9332. But take little exercise and in-door occupation, or great exercise and in-door occupation, can you find any class to which either description applies in which the deaths from pulmonary disease approaches the number in the army?—Yes.

9333. To what cause do you attribute the large proportion of deaths in the army from pulmonary disease, to any peculiar influence which operates upon the soldier?—I have a strong conviction of my own, and the returns for the army give a complete solution to it.

9334. (*President.*) Your argument applies entirely to intemperance from drink, not to sexual intemperance or debauchery?—Certainly.

9335. The other cause may remain operative upon the soldier?—Yes; I have not given special attention to that cause. The foot guards are the least healthy of all, and there we find a very remarkable increase of diseases of the respiratory organs. The household cavalry are the most healthy branch of the service. There the increase is comparatively very small, 25 per cent. only, beyond the normal conditions. The dragoon guards stand next in order of health to the household cavalry, the increase being 59 per cent., the infantry of the line being between the dragoon guards and the foot guards, and showing an excess of deaths from diseases of the respiratory organs of 116 per cent., the foot guards being in excess 172 per cent.; and it appears to me that, combining those results with the observations made upon the essential nature of exercise best calculated to promote the healthy condition of the lungs, you have a clear solution of that question as to the army. In the household cavalry the soldier has a large amount of physical exercise which the foot soldier has not, and the thorax is exercised in a more beneficial manner—he has stabling to attend to. The dragoon guards are in the same position with the household cavalry, but as you approach to the infantry there is still less of exercise for the thorax, and it seems to me, as you come from due amount of proper exercise to the want of it, there is a large increase in the diseases in the chest. I do not consider that exercise of the legs would suffice for exercise of the chest.

9336. The cavalry also have horse exercise?—Yes.

9337. (*Sir T. Phillips.*) How do you reconcile that theory of yours with the fact, that with little exercise and in-door occupation, at the period of the soldier's life 30 the expectation of life is nearly as great as with great exercise and out-door occupation?—The comparison would be taken more fairly with out-door occupations and little exercise. If you take the whole of the soldier's period of life the statement given for the individual age of 30 would not apply; I think it would be unfair to consider the soldier's an in-door occupation.

9338. Take little exercise and out-door occupation, there the disparity is by no means considerable?—It is very large; it is six years upon age 30; it is, in fact, 20 per cent., which is not far from the proportion in the household cavalry.

9339. What is the proportion of the diminished value of life between those two classes, little exercise and out-door occupations, and great exercise and out-door occupation, which is due to pulmonary disease?—I should think a very small proportion of it. I consider that those classes are as near as possible to the normal condition as to pulmonary diseases; in fact, pulmonary diseases do not appear in any unusual development, and as to out-door occupations and in-door occupations I think it would be difficult to discover any group whatever in which the pulmonary affections are so much in excess as in the infantry of the line and foot guards. I have found classes in which the tendency approaches close to the household cavalry, but then that branch of the service is comparatively healthy.

9340. (*Sir James Clark.*) What is the difference between the infantry of the line and foot guards?—The excess is 115 per cent. in the infantry of the line, and 172 per cent. in the foot guards.

9341. Have the foot guards much less exercise?—Yes; but I think that the chief comparison should be between the infantry and cavalry regiments as a whole.

9342. (*President.*) Can you account for the difference in the mortality between the dragoon guards and the household cavalry?—No, unless it is attributable to the small number of the household cavalry, or that they are called upon for more exercise.

9343. Can you give the rates of mortality of the sepoy, who does not occupy a barrack, but is hutted?—Yes.

9344. (*Sir T. Phillips.*) How did you ascertain that?—From the returns of the East India Company. Dr. Balfour has also published a very good analysis for one of the presidencies.

9345. Are those reliable tables?—Yes.

9346. (*President.*) They have been published by Colonel Sykes?—Yes. Colonel Sykes got the ages for each regiment for four years, and showed the deaths at all ages, and the causes of death.

9347. The rates of mortality in the sepoy are not in excess of the rates of mortality among the civil native population from which he is recruited?—It is somewhat less.

9348. (*Sir T. Phillips.*) How do you know the rates of mortality among the civil population?—A census was taken for a large number of districts, not for the whole of India, but several were taken by medical boards in India.

9349. For particular localities?—Yes.

9350. (*President.*) Taking them as types of the whole, you have come to the conclusion that the rates of mortality among the native army are rather better than in the population from which it is drawn?—Yes.

9351. The sepoy is hutted, and leads a very temperate life; take the Ghoorka, who is in the same condition, as to being hutted, but who drinks strong drinks, have you any returns to show their comparative mortality?—Yes. One series of returns shows a very great increase, and the other shows a decrease in the Ghoorka, but I should doubt whether the average difference is a very material one; the difference is only about $\frac{2}{10}$ths per cent. per annum in the deaths.

9352. Could you give the difference between the Madras and the Bengal army?—Yes, for the whole army. I have it for the whole native army, over a period of 20 years, beginning in 1825, and ending in 1844. For the whole of the Bombay army it would be 12·9 per 1,000, and for the Bengal army 17·9 per 1000.

9353. Upon what number of men?—The whole number of men in the three presidencies averaged during the 20 years about 200,000. The official returns contained some errors which were afterwards corrected for Colonel Sykes' paper.

9354. (*Sir T. Phillips.*) Can you account for the great difference between the two?—No, except that the armies are composed of different castes, and live differently; but you will find in Colonel Sykes' paper a good deal of information upon this subject.

9355. Have you examined the subject, so as to be able to confirm Colonel Sykes' conclusions?—As to officers in the army, I have thoroughly gone into the question; and in Madras it is 20 per 1,000.

9356. (*President.*) Do you mean European officers of native regiments?—Yes.

9357. (*Sir T. Phillips.*) Did you mean 20 per 1,000 of Europeans?—Yes.

9358. (*President.*) You mean the officers of native regiments, do you not?—These results refer to the officers of the whole native army of India.

9359. Can you show the rate of mortality among officers in the East India Company's service?—Yes.

9360. Can you compare them with the mortality among the officers in the Queen's regiments in India?—Yes; and the mortality shows a very remarkable difference.

9361. Are you speaking now of European officers in the East India Company's service?—Of both services.

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9362. Excluding native officers in the Company's service?—Yes. The data, in regard to the Company's service, are taken from the books in the India House, and are thoroughly reliable. There has been a great improvement recently in the health of the officers in India; but taking the first 47 years of this century, the mortality has been 23 per 1,000 over the term of life you may call the soldier's age; but in more recent years the health of the officers in the army has very much improved.

9363. What is the mortality now?—In the most recent period it is down to 21 per 1,000 and 20 per 1,000. In some districts, between the years 1820 and 1839, it was 20 in 1,000, exactly; whereas, in the Queen's troops, the mortality ranges in one district from about 48 per 1,000 to 51 per 1,000 in another.

9364. May not great objection be taken to that comparison, inasmuch as the officers in the Company's regiments are in very great numbers detached from their corps, and are employed in civil occupations, not living with the troops, and not sharing their hardships?—That may at first sight appear to be so, but I think I can show it is not a real objection. I have gone into the health of the civil service in India for the purposes of their various funds, which require most patient research, as they involve the consideration of enormous sums of money. I need not say that both the civil and military service in India contain a vast number of men, showing great intelligence and capability, for dealing with this very case. Not the least remarkable part of the literature of India is the correspondence that is kept up amongst the officers in relation to to the various funds. If you exclude the deaths taking place in the military service, in the field or due to the field, and view only the deaths from natural causes, you will find the mortality is as nearly as possible the same that is taking place in the civil service in India. That you will find in the various reports that I have made on these funds—and being printed, may be easily consulted. The condition of one of the largest funds in India is such as to cause all eyes to be now fixed upon it, and in each of the reports they distinguish for a number of years the deaths that take place in the field from the deaths arising from natural causes. The elements are given to the world for a solution, and if you eliminate those extraordinary or violent causes of death from the natural causes you will find that it reduces the mortality in the military service, in recent years, to as nearly as possible that in the civil service. You must not go back to see what the mortality has been in the whole military service in India since 1760. Generally in the consideration of this subject the mortality of the last century has been mixed up with the mortality in India within recent years, and includes the excessive mortality which took place during the early period of the settlement in India.

9365. In which category have you counted officers belonging to the military service, but attached to the civil service; have you not counted them twice over?—No; those comparisons are made in respect to the individual funds. Take the Bengal civil fund, military officers though doing civil service cannot belong to the civil fund; it is a fund in one sense independent of government, but which it is still compulsory upon a large number of the civil servants to enter. After their death their widows and children receive pensions, consequently members of the civil service only enter into any inquiry respecting the health of the members of that fund; the military are not mixed up in the investigation into the rates of mortality.

9366. But in comparing civil with military, you come to a body of men of whom two out of ten may be with the army, and eight in civil life?—No; you investigate the whole of the military service, and you find that out of the deaths that take place from natural causes, when you eliminate the causes due to active service, the residue shows the normal state of the mortality, consequently you see whether the normal rate of mortality is greater or less than that of the civil service.

9367. How do you account for the large rates of mortality among the Queen's officers in the same country with the Company's officers?—I have so little knowledge of the Queen's service that I cannot answer the question. I simply know the reputed fact, and I am not even responsible for the result.

9368. Have you heard this explanation of it, that the cadet going out to join his regiment in India finds society already formed in a climate and a country whose habits are regulated as precautionary against the dangers of the climate, whereas a Queen's regiment arrives in a body, the officers are unacquainted with the dangers of the climate, and do not believe in the necessity for precaution till they are sick in their beds?—I have no doubt that a good deal of the solution is offered in those remarks, and believe it would place officers of the Queen's service something in the position of officers in the Company's service who went out in the early periods of the settlement, and were unacquainted with the precautions necessary to be taken in that climate when the mortality was high. The army returns, if properly analyzed, would afford a proper answer to the question.

9369. (*Sir T. Phillips.*) Can you give the mortality amongst the officers in the Queen's service, as distinguished from the men?—Yes, it is very much less; it is about five per cent.

9370. What is the mortality for the whole of the Queen's service?—I have a very elaborate analysis of those results for the average of all the Queen's service for the years 1818 to 1837. It varies in the various presidencies from $7\frac{1}{2}$ per cent. in Bengal to $6\frac{1}{4}$ in Bombay, the average for the whole of India being 73 per 1,000 per annum.

9371. What was the case with the officers, separated from the men, at the same time?—The officers about 50 in 1,000.

9372. (*Sir James Clark.*) Can you account for the diminished mortality among the officers, in the last few years in India?—I have no doubt that they are more temperate, and understand the precautions demanded by the climate better; I am now investigating that question, having been furnished with the causes of death.

9373. (*Sir T. Phillips.*) With regard to the Indian army, do you know at all whether the recruiting for the three presidencies is from a different class of men, or, if not, in what way is the great difference in the mortality to be explained?—You will find that in different districts the army is composed of men of different castes, and that there are districts in India in which the mortality is under one per cent.

9374. Bombay is the largest, from what source is that army recruited?—It is very various. I believe they are, to a great extent, Hindoos.

9375. Take Madras?—The most favourable district in Madras is Coorg, which has a large proportion of troops, and it is not above eight in 1,000.

9376. (*President.*) Speaking of the Indian army, you have stated that the rates of mortality are not higher than among the native population, do the native populations of the three presidencies show some variations?—I cannot speak of the whole, but those I can speak to differ very little indeed, and there is still another consideration. The service among those troops includes active service, which I believe has been very fluctuating in its results. From 1842 to 1844 in Bombay there was a very large increase of mortality. If those three years were taken, you would find an increase in the Scinde district of two or nearly three times that in the rest of the presidency.

9377. If you could eliminate the troops on service, and the troops quartered in Scinde in very unhealthy districts, the difference in the mortality would be very much reduced?—Yes; if you compared the residue of the Bombay presidency, that is, the mortality amongst the troops that had not been in Scinde in the war, you would find that the health was exceedingly good.

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9378. (*Sir T. Phillips.*) Do the actual deaths include the deaths from violence ?—Yes.

9379. You cannot deal with the proportionate disparity which may be attributable to loss in the field ?—Not at this moment, but that information could be easily given.

9380. Have you the means of showing whether there is a great disparity between the value of civil life in other European countries, and the value of the soldier's life ?—Yes.

9381. Is that a subject you have paid attention to ?—Yes.

9382. What is the result ?—I think I can prove that in most European nations there is very little difference in the mortality as to the native civil population ; very exact returns, more so than for this country, exist for the whole of Sweden, for upwards of a century, and there is very little variation in the value of life in the whole of that period.

9383. A variation between what ?—From year to year in the rates of mortality ; there are documents in the registrar general's reports on that very point, showing that in this country, since the time to which the data employed by Dr. Price, beginning in 1735, there can have been very little difference in the mortality among the whole population of this country. The general opinion has been formed on the results of an error in the use of the data employed by Dr. Price, but which Dr. Farr has rectified, showing that if Dr. Price had employed proper methods in his investigation, the results would have agreed as nearly as possible with those deduced by Dr. Farr for a period of seven years, of which 1841 was the centre in the same district. There is the Carlisle table, which refers also to the middle of the last century, for another district of England, and the value of life according to that is as nearly as possible the same as the results now deduced from the registrar general's returns. The same thing will be found in other countries. In the blue book of the War Office, of 1853, will be found the mortality for the various armies in different parts of Europe and in America ; and in those various armies, though showing different rates of mortality, they are all in excess of the ordinary population.

9384. (*President.*) In point of fact the Indian native army is the only one you know whose rates of mortality are not higher than the population from which they are drawn ?—Yes. But I should doubt very much whether the returns referred to by Colonel Tulloch in regard to foreign countries have been investigated with the same scrutiny as his own.

9385. (*Sir T. Phillips.*) Does the disparity in any other European army between the value of civil life and the soldier's life at all equal the disparity in the case of our own army ?—I should doubt whether it does.

9386. (*Sir James Clark.*) Has not the value of life increased since the time of Price's tables and the Carlisle tables ?—No, I think Dr. Farr has conclusively shown that it has not done so.

9387. (*President.*) In the Prussian army the rate of mortality per 1,000 is 13·1, in the United States army it is 18·8, and in the French army it is 19 ?—I believe so, according to official documents.

9388. (*Sir T. Phillips.*) The value of life in France is rather less than in England ?—Yes.

9389. (*President.*) Can you give the Commissioners the mortality among the *Times* printers ?—No ; but I will endeavour to obtain it.

The witness withdrew.

Adjourned to Friday next at One o'clock.

Friday, 17th July 1857.

PRESENT :

The Right Hon. Sidney Herbert, M.P.	Sir Thomas Phillips.
A. S. Stafford, Esq., M.P.	Sir James Clark, Bart.
Dr. Andrew Smith.	J. R. Martin, Esq., F.R.S.
T. Alexander, Esq., C.B.	Dr. John Sutherland.

President, The Right Honourable SIDNEY HERBERT, M.P.

Dr. Andrew Smith, further examined.

Dr. Andrew Smith.

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9390. (*President.*) Have you got a copy of the general instructions for the guidance of medical officers, the heads of staff, and others, in charge of departments ?—Yes, I have. (*The same was handed in.*)

9391. Do you wish to offer some observations in reference to questions, which have on different occasions been put to you, as to confidential reports ?—Yes, in consequence of what happened at my last examination here ; I stated that the usual practice was, when a confidential report, upon an officer, arrived from a foreign station, and I discovered anything particular in it that warranted me in interfering, in reference to what was unfavourable, to write a letter to the officer, forwarding it through the principal medical officer, with a view to get the officer's explanation. That I did not state the words of the report to him, but that I did do so in the event of his professing not to know what he had been reported for. I then give him the exact words, and I will mention a case at the present moment, which shows the course that I pursue ; the case is still under consideration. I wrote to the officer as I have said I write, and he professed not to know what the charge was that had been made against him ; I then furnished him with the very words of the writer of the report. My principal reason for wishing to speak on this point is, that I was referred on my former examinations to some answer that I had given on Mr. Stafford's committee, and I inferred, from an observation that was made, that it was thought that answer was inconsistent with the answers that I gave on that occasion. Now I hold that they are perfectly consistent, inasmuch as I only gave a partial statement ; all the necessary questions not having been put to me. On Mr. Stafford's committee the question was not put to me, whether I gave the purport of the report to the officer ; it was, whether I communicated the report to the officer, and by that I understood, whether I communicated the literal words of the report. The questions to which I refer, and to which my attention was called, are 343 and 344, and they run thus :—" Do you ever communicate to the " individual implicated, the confidential reports made " to you ?—No, I do not, as a rule." Which I hold to be quite consistent with what I said on my last examination. The next question is, " In

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"short, you make it a rule not to communicate them? "—I make it a rule not to communicate them; I do "it only as an exception." I hold, that another question is wanting, namely: Do you communicate the purport of a confidential report: if that question had been asked me, I should have said yes, but that question was not asked, and, therefore, I again say, that I hold the one is perfectly consistent with the other.

9392. Then the Commissioners are to understand that the practice of the department is when a confidential report is made against an officer to communicate to him the fact that he has been reported against, but that the actual words of the charge are not communicated to him unless he expresses his ignorance of the charge, and in that case the very words are sent to him?—Yes.

9393. (*Sir T. Phillips.*) But in any case the substance is communicated to him?—Yes; with reference to my answer to that, I may say, that during the time I have been at the head of the army medical department, a period of 7 years, I do not think I have in two instances received letters from officers to say that they did not know what they were charged with. They all knew, but some choose to carry on a long correspondence, and say that they do not know; when they require me to state what the actual words were, I always do it, either verbally or in writing.

9394. I believe you also wish to offer some explanation with reference to questions that were put to Mr. Taylor, he having stated in evidence before the Commission on the 10th instant, that he had been specially recommended for promotion while serving in the Crimea?—Yes, Mr. Taylor gave it to be understood, in his answer to one of the questions, that he complained that he had not been promoted, although he had been specially recommended for promotion; and he further added, that I had to a certain extent recognized that, when he spoke to me in my office on the subject of his having been recommended. I am sorry to say that I must take exception altogether to that statement, for he never was recommended for promotion to the rank of inspector-general by any person who communicated that to me. He applied six months after he had been made deputy inspector-general, and addressed a letter to General Simpson, and asked to be promoted in the Crimea; he sent it to Sir John Hall to forward and Sir John did forward it to General Simpson, and reported favourably in reference to Mr. Taylor, which no doubt he deserved. The application reached General Simpson, but he never sent it home to this country recommending him for promotion. I have ascertained that; he sent it with a number of other documents at the end of the war, for the information of the Commander-in-Chief, when referring to medical officers who he thought had done good service during the war; and one of those documents was Mr. Taylor's application to him for promotion, but he does not say a word in favour of claims to promotion. There were somewhere about 40 or 50 officers reported upon in that document, and I distinctly say that Mr. Taylor was not recommended to any authority in this country for promotion to the rank of inspector-general as he stated.

9395. Is there any other point upon which you wish to give any information to the Commissioners as to any evidence that has been given before them?—Yes, I should like to refer to a number of cases that have been brought forward by medical officers as evidence of mal-administration in my department. Dr. Beatson on being examined brought forward as evidence that a staff-surgeon of the second class on half-pay had not been brought in fairly. He commenced by stating that No. 3 on the list of half-pay, the third senior, was brought in first. With reference to that statement I have simply to say that the senior on half-pay was Mr. Brush, who was then sick, and who is still sick. The next was Mr. Maclise, who from mental affection was unfit at that time, and is still unfit. The next was Mr. Braybrook, whom I took first, though he stood third on the list.

9396. Did he not stand first on the list of those who were efficient?—Yes, but third on the list of the men on half-pay; that is the mistake. Persons who complain do not know the circumstances of each case, they assume that the mere number must be right, whereas in this case Mr. Braybrook was the first officer efficient. Then there was another case brought forward. It had reference to three officers who were brought in before they should have been. These were three officers who were in the Land Transport Corps in the Crimea, and when the Government resolved to re-organise that corps, and call it the military train, medical officers were to be provided for it, and those officers to whom I have alluded, and who had been placed on half-pay, Colonel Macmurdo, the officer in command, naturally enough applied to have restored to the service, and I thought it my duty to comply with his request for the good of the service, therefore those three officers do not appear restored exactly on the list as they stood.

9397. Why was it for the good of the service?—Because they were returned to a service with which they were acquainted. It is the practice throughout the whole service to do that, unless it is productive of very gross injustice to individuals. There was another officer he complained of as having been brought in early, who stood low down on the list, Dr. Fyffe.

9398. How did those officers if they were wanted in the military train come to be reduced?—Great numbers were reduced in the first instance before they came to consider what was to be done. The reduction had been carried too far, and when they re-organised the corps and made it a military train, they applied for the same men to be restored to the corps. As to the other officer of the name of Fyffe. A good deal of correspondence took place at one time as to the propriety of trying the effect of the Bath waters. The opinion upon the subject was very divided; some were adverse to it, and many were in favour of it. I anticipated no good results from it, but as opinions were divided I thought it necessary to have one of the very best officers that I could find, who would be very particular in observing the results, and I therefore felt no hesitation whatever in recommending Dr. Fyffe to be restored for that special duty.

9399. Had he had any previous acquaintance with the subject of mineral waters?—No; I do not know that he had, nor do I know that I could have found anyone who had. He was a man of a certain stamp, with great powers of observation, very industrious, and zealous, and anxious to perform well any duty that he might be appointed to; therefore, I felt that he was a man I could trust, in order to procure true statements, and not be told that the Bath waters were useless or were valuable, unless they were really the one or the other, I thought this officer specially qualified for that duty. Then, with reference to the remainder, who have been brought to full-pay they have all been brought from half-pay according to their standing except two. Mr. Crerar was not brought back, or rather he was brought back after he ought to have been, and the reason of that was, that he on being put on half-pay proceeded to Halifax to reside, and he did not wish to come to this country until he could be on full-pay. When there was only one above him, I communicated to him that he must instantly return to this country, if he wanted to succeed in his proper turn. He did not return, and two vacancies occurred in the meantime, therefore I could not appoint him, being at Halifax, so I was forced to take those men who were available, and recommend them at once, and in that way two went over his head; but that was his own fault, not mine. Then there is the other that has not been restored to full-pay, a staff surgeon of the second class, of the name of Lewis; he is residing in Canada at his own request, and is not anxious to be brought to full-pay until all those of his grade are brought. As long as he asks to remain on half-pay I do not force him, so long as there are

any others I can bring in. That is all that I have to say as to those cases. Then, either Mr. Beatson or *Mr.* Taylor brought forward some other cases as evidence of unfairness on my part. The first case was that of Mr. Tupper; he was promoted to the 66th regiment, in Canada, not, as Mr. Taylor stated, on account of a death vacancy, but on account of the retirement of Mr. Montgomery, who was found unfit for the service, and was placed on half-pay; I then had to recommend an officer to succeed him, and at that time when the vacancy arose there were five assistant-surgeons in the whole service who were senior to Mr. Tupper; three were in India, and were therefore not eligible to be promoted in this country, and two others, one at home, and one at Nova Scotia, The 60th regiment had for nearly 18 months, so far as regarded the medical department, been in a state of disorganization, in consequence of the inefficiency of Mr. Montgomery, and I felt it to be my duty to select an officer who I believed possessed the ability, zeal, and decision of character that was required to restore the medical organization of the corps, and therefore, without any hesitation, I recommended one that I knew was able to do it, namely, Dr. Tupper, and I passed over the two others, neither of whom I could have taken.

9400. Were they both men who were unequal to the charge?—Yes, the one was perfectly unequal to it, and the other was not a man who I considered would do justice to the corps though not an inferior man, but he had not the activity and zeal which I thought were necessary for the corps.

9401. In that case you exercised selection?—Yes, and I felt less reluctance to do so, as I saw that in a short time I could promote both of those officers to positions that would not require the same amount of energy and zeal, and consequently I recommended Mr. Tupper, which I considered I was bound to do; I think I should have done injustice to the service if I had not done so.

9402. In that case you acted as you would have done in the senior ranks for the good of the service; you took the best man, the one most capable of doing the duties, and put him over the head of men whose proficiency you doubted?—Yes.

9403. And you considered that the good of the service required that course to be taken?—Yes.

9404. In the promotion from the rank of assistant-surgeon to surgeon where the good of the service requires it you would depart from the rule of seniority?—Yes, in the promotion from assistant-surgeon to surgeon seniority is observed unless there is any necessity for passing over the senior.

9405. In the case of these two men that were passed over, but who were equal to other posts afterwards, did you antedate their commissions so as to preserve to them their original seniority?—I cannot answer that question, but I think not.

9406. Are you allowed to antedate commissions?—Great objections are raised to it and I am afraid to try it.

9407. (*Mr. J. R. Martin.*) Did you take an early opportunity of promoting those two officers notwithstanding?—I think a month afterwards, speaking from recollection; I was aware that there would be opportunities of promoting them.

9408. (*President.*) I take this opportunity of asking you a question which arises on this case, which is this:—How do you account for the difference between the vacancies which occur on foreign stations, and the death vacancies which occur through promotion, the distance from which you bring the men, the delay to which a regiment is subject, and the cost to the country being the same in either case?—I cannot account for it except in this way, that it was the practice of the service when I came to the medical board, and I continued it, having considered it fair that death vacancies should be filled up on the spot for the reasons I have stated before; there may be a severe epidemic, such as yellow fever in the West Indies, and the surgeon may die, and the assistant-surgeon during all that time may have been exposed to the same danger and the same amount of labour that the surgeon had, and if he were not to get the vacancy that arose, but another man perhaps from England or the Cape who was senior to him, but who had never seen any serious disease, he would naturally feel that he had not benefited from his exertions in the West Indies.

9409. It is like the case of a man employed in war who thinks that he has a better right to a vacancy than a senior who was not engaged with the army in the field?—Yes.

9410. You mentioned the case of Gibraltar, which was separated from the rest of the Mediterranean command, on account of the fever that prevailed there, and that you gave the vacancies to the men at Gibraltar, they having been exposed to the danger, and having a right to benefit by the vacancies; in the same way it was the ill luck of the men at Malta, who were not engaged at Gibraltar, and having the same means of distinguishing themselves?—Yes, I consider that the danger to which an officer is exposed during a severe epidemic in the West Indies is greater than the danger that a man is exposed to in war.

9411. Still the proportion of medical officers who died at Scutari was greater than those who died in unhealthy colonies?—I do not reckon Scutari in the category of war. That was a large hospital, with a large number of patients, and at a great distance.

9412. If a vacancy took place at Scutari then, an officer on the spot got the promotion. Would you or not think that the officers who were in Canada at the time had a claim upon you, as they had not had the same opportunity of distinguishing themselves as if they had been at Scutari?—They would not have a claim upon me, as it is understood that death vacancies are given on the station.

9413. Still, I think, you stated that in the case of the death vacancies that took place, you had given to officers away from the scene of action some promotion, in recompence for their not having had an opportunity of serving in the Crimea?—No, I am not aware of having stated that. I stated, that when officers came home who had been absent, and when an additional force of medical officers was to be sent out to the Crimea, I sent them, and that when they could be promoted, I thought they ought to take their standing in the grade to which they were raised, according to the length of their general service. It is a matter of opinion. I think it is just, others may think that it is not just. And now, when on this subject, I should like to advert to a memorandum that I have here. It has been urged, that the artillery and engineers' seniority corps do gain advantages for being sent to war, though they may be junior officers to others serving at a distance, who were not available for war. I find that that is not the case. If a captain of engineers was sent to the Crimea, he being 10 below a captain in New Zealand, and a death vacancy occurred in the Crimea, in consequence of the death of a senior officer serving in the Crimea, the captain in the Crimea would not get the promotion. Our officers claim to have promotion, and they get it, therefore they have rather an advantage than otherwise.

9414. You must recollect that in your upper ranks you do not affect to have seniority, it is selection?—Selection, as I have stated, is put forth to be the rule, but then I have found it is so impossible to satisfy myself that I would not do injustice in observing the rule, that I have generally taken upon myself to observe seniority if possible. The rule is selection, from the circumstance that Sir James Macgregor himself told me, when I came into the office, that it was the rule, and he also stated before the Military Commission that sat in 1840, that that was the rule.

9415. The practical result is this—that whereas you select in the rank of assistant-surgeon for the good of the service, although professedly that rank is governed by seniority, you take seniority in the upper ranks as

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your rule in selection, because you find it so difficult to place one man over another, so that in the rank which is nominally promoted by selection, the promotion is by seniority, and in the rank which is promoted nominally by seniority, the promotion is by selection ?—In some cases. In the case of the assistant-surgeon referred to, I wanted a special man for a special duty, and I felt that the two men who were senior to him were not men calculated to do justice to the public, therefore I took him. With regard to selection of senior officers, I would not take an officer of the senior grade, a deputy-inspector, and recommend him to be made an inspector-general, if I thought he was not equal to the duties; but if I was satisfied that he was equal to the duties, I would go on the ground of seniority, and recommend him.

9416. (*Sir T. Phillips.*) With regard to promotion in a colony, or in any station by reason of a death vacancy, you say that you found it to be the practice in the office, and you regarded it as a sound practice, as it affords the opportunity of rewarding a man who has been exposed to special danger; but supposing him not to be exposed to any special danger, what then ?—I found even in that case it to be the practice.

9417. But it does not become necessarily a reward of special service, but the result of accident ?—But it was originally instituted as a reward, yet instances have occurred in which it was not a reward.

9418. In order to be a reward it must be a selection by reason of circumstances having actually occurred, not because they might have occurred ?—So it was when the regulation was established.

9419. (*Mr. J. R. Martin.*) Would it not be more fair, as all medical officers take their chance both of epidemics and of actual warfare, that they should also share the promotion—that a man who had been exposed to epidemics in the West Indies should be promoted there in case of accident, and that a man on the field should also be promoted there ?—That is actually what takes place.

9420. (*President.*) It is what takes place when the vacancy is a death vacancy ?—Yes.

9421. But this may occur in a place where there is yellow fever—that there may be no death vacancy, but the promotion then is given to the senior in the army list ?—Yes.

9422. On the other hand, if it were a death vacancy, it would go to the officer on the spot ?—Yes, that is a matter of chance. I found that to be the rule, and I have not thought I was justified in deviating from it. The next case was the case of Mr. Murphy. When the 80th regiment was ordered home from India, or rather it was after the regiment had probably embarked, I was required to provide for service in the Crimea, three staff surgeons of the first class. I ascertained that Mr. Taylor was close to the shores of this country, and as I had found him a very good officer during the Burmese campaign, when I appointed him principal medical officer of Her Majesty's troops, and from time to time received excellent reports from him, which kept me well aware of what had taken place, I selected him for one of those three staff surgeons. At that time, in March 1854, I was overpressed with work, and the clerk in my office who makes out the list of the seniors who are entitled to promotion brought it to me, there being nine surgeons required exclusive of the three staff surgeons, and placed the list before me, having omitted in that list Mr. Murphy's name. I had no time to scrutinize the list, as I should have done had I had the ordinary time as in peace, but immediately said, "Yes, recommend those men," and they were all recommended and gazetted. A few days afterwards, when I had a little time to look to what I had done, I discovered that Mr. Murphy, a man whom I never had thought of passing over, had accidentally been passed over, from not having been introduced into that list. I immediately ordered that he should be the first man to be recommended for promotion, and in about a month afterwards an occasion arose, and Mr. Murphy's name was sent in at once, and he was promoted; so that all that can be said in that case is, that it was a simple oversight during a period of unprecedented pressure.

9423. (*President.*) You would not have done that if you had been aware that his name was there ?—Most decidedly not. He was one of the most experienced of the whole number. His name is in a list that I am now getting up to have, if possible, certain commissions antedated. I do not know whether the Commander-in-Chief will accede to it, as it will involve the antedating of a great number. If he does accede to it, it will be a precedent that will keep up a constant turmoil in the department, for there are many who could not be promoted in consequence of not being available. Nobody can conceive the trouble and difficulties that the slightest movement of this kind creates. I shall receive, perhaps, 20 letters as to a point of that kind. I am afraid to try to do it, although it would be only an act of justice to do it.

9424. (*Sir T. Phillips.*) In that case it would be simply the correction of an accidental miscarriage of your own ?—Yes; but every one else would be ready to say, if that was to be done merely because officers were not available, that their commissions should be antedated too. The third case does not come within my time, but, notwithstanding, I am equally prepared to defend the proceeding of Sir James Macgregor as if it had been my own; it is the case of Mr. Matthews. Surgeon Charlton, of the 2nd battalion of the 67th regiment, was examined by a board of officers at Gibraltar, on the 15th March 1849, and recommended leave to England for the benefit of his health. He was examined at this office, and granted four months' leave, which was extended till his death, which occurred on the 20th August, 1849. On the 29th August Assistant Staff Surgeon Matthew was recommended for the surgeoncy of the 67th, vice Charlton deceased. Mr. Matthew was, at the time, the senior assistant-surgeon serving at Gibraltar, and, by desire of the Commander-in-Chief, he had been specially recorded for promotion on the recommendation of Sir Robert Wilson for his services at Gibraltar and at Tangiers, in attendance on the Sultan's nephew. I must say that when such recommendations as these come for special services, it is the practice to consider them, if not imperative, as next to imperative.

9425. In the rank of assistant-surgeon ?—In any rank. The next is the case of Dr. Reid, and his case was this :—Staff surgeon 2nd-class Stewart, one of the medical staff of the Mauritius command, was examined by a board, at Port Louis, on the 27th October 1848, and recommended to be sent to England for the benefit of his health. On his passage home, before reaching the Cape, he died (on 19th November 1848), and the senior assistant-surgeon in the Mauritius, viz., Staff Assistant-Surgeon Reid, was, by the rule of the service, entitled to the vacancy; but as the staff at the Cape was then being reduced Mr. Stewart's vacancy was allowed to lapse, and the first vacancy which occurred at the Cape after the reductions had been effected, was given to the Mauritius command.

9426. There were two seniors to him, it was stated, in Ceylon ?—Ceylon has nothing to do with the Cape and Mauritius command.

9427. If you recollect, Dr. Beatson said that it had in his time, as he obtained his promotion, being in Ceylon, on account of a vacancy that took place in the Mauritius ?—I cannot fully explain Dr. Beatson's case; I was not head of the department when he was promoted.

9428. But they are acts of selection for the good of the service in the rank where promotion is governed by seniority ?—Dr. Reid and Mr. Stewart were serving together in the Mauritius. Mr. Stewart was taken sick, and it was found necessary to send him home. He died on his passage before coming home, and therefore until his arrival in this country he belonged to the Mauritius staff. Dr. Reid was entitled to the death vacancy, being the senior in the command at that time. The government had decided that there were not to be the same number of staff surgeons of the second class at the Cape as hitherto. A reduction

was to be made, and therefore they would not sanction the promotion of Dr. Reid, but decided that his promotion should be deferred till the next vacancy, which occurred at the Cape in the 91st regiment; and Dr. Reid, who ought to have got the death vacancy in consequence of Mr. Stewart's death, was promoted to the 91st regiment, and sent to the Cape.

9429. He was the senior?—Yes. The next case is that of Dr. Beatson himself, who stated that he was promoted from Ceylon to the Isle of France. His case was this:—Staff assistant-surgeon Beatson embarked for Ceylon on 23rd May 1839; was promoted to be staff surgeon 2nd class, on 28th August 1846. On 10th October 1850 he was warned for duty in Hongkong, but on the 12th the order was cancelled, and the principal medical officer was told to send him home the first officer on duty. He had been too long a time in the island, having had an undue advantage over other medical officers, who were all anxious to go to Ceylon. He continued in Ceylon till he exchanged into the 51st in India, on the 31st January 1851, but before the appointment had reached Ceylon he had left for England with invalids. He arrived at home 23rd May 1851. These are all the cases that have been brought forward as evidence of maladministration, and I have nothing further to say.

9430. There was a question with regard to Mr. Wood and Mr. Paynter?—Yes.

9431. Those cases I think you explained before?—Yes. I kept them on temporary full-pay, and they were aware of that, from a letter written by me to say, that as soon as the special duties were concluded in which they were engaged, they would be placed on half-pay.

9432. Were they duties requiring any special qualification?—Yes; one was employed at Portsmouth landing the sick, where he had been for eight or nine months; the other Mr. Paynter was at Aldershot, where a good deal of duty was required to be performed of a special nature in the formation of the camp, from which place I did not think it desirable to take him away for a few months, in order to put a man in his place who would have to learn the duties, which the other had already learned.

9433. Did you not afterwards move those two officers to York and to Edinburgh?—Yes; because accidental circumstances arose, but still they were for temporary duty; the same had before induced me to place one at Chatham for a month to assist the principal medical officer, instead of bringing a man from half-pay for a month, and then put him back to half-pay, and therefore I kept them on, with the intention, as soon as there were no particular duties for them to perform, to put them upon half-pay.

9434. I understand from you that both those officers had special duties to perform, and that their special capacity enabled them to execute them better than other officers?—Not capacity, but local knowledge.

9435. They might have had local knowledge at Aldershot and at Portsmouth, but they had none at York or Edinburgh when they were moved to those places?—There they went as fresh men. I should have put them upon half-pay, but at that time there was every prospect that the two officers who had been taken away, one from Edinburgh and one from Leeds, would very soon be back from China, when I should be compelled to find places for them. My intention was to send them back, one to Edinburgh and the other to Leeds, and to put Mr. Wood and Mr. Paynter on half-pay. Had I acted otherwise I should have had at once to put Mr. Paynter and Mr. Wood on half-pay, and bring two men in from some part of the country to full-pay, and keep them there for three or four months till those came home who were senior to them, and then put them back upon half-pay; I consider that would have been no advantage to a medical officer, taking into account the trouble and the moving about that he would have been subject to.

9436. There were officers, were there not, who were reduced who might have been kept on?—No, not permanently. The officers who were reduced are all now in one position. Mr. Wood and Mr. Paynter were only kept on for temporary duty, and not as of the permanent staff. As regards the case of Mr. Ligertwood, it was asserted by somebody that he was merely promoted for having done duty in the principal medical officer's office. At that time I was not able to state his case, but I find now that Mr. Ligertwood was one of those officers who volunteered under the pressure to leave his corps in this country and go to serve in the Crimea, though his corps was not there. He embarked on the 7th April 1854; he got to Seutari on the 24th April 1854; he was attached to the 2nd division from the 25th April 1854 till the 25th of August 1855, which was nearly 16 months; and he was then, on account of his efficiency as an office man, taken by Sir John Hall into his office, and was employed in it till the termination of the war; therefore a great portion of the time that Mr. Ligertwood was in the East, he was employed in actual duties in the field.

9437. At any rate that was a case with which you had nothing to do, it was under the sanction of the Commander-in-Chief there?—Upon the recommendation of Sir John Hall. There is another case that I wish to refer to, that of Staff-Surgeon Stone, who was serving in the West Indies. He was junior to some of those who were on half-pay, and I mentioned that circumstance to Lord Panmure at the time. He had been sent to the West Indies to fill a vacancy, and had been there for six or eight months, and I told Lord Panmure that he did not come legally among the number for full-pay, when he said, as he is there, let him remain, I will be responsible for that. Then also it has been stated that I had recalled to full-pay Deputy-Inspector Hadaway, and Deputy-Inspector M'Donald, while there was a senior deputy-inspector on half-pay. Quite true I selected in that case, and I was prepared to show my reasons to the Commander-in-Chief at once why I selected, but I should not like to say here why I passed one man over and took two juniors. I wanted a station suitable to him and that station has now come; I did not consider the stations to which the other two men were sent were stations to send him to.

9438. In that case it was a selection on your part with a view to the good of the service?—Yes; I do not mean to say that I do not use selection in such cases, I always do when I see that the interests of the service require it.

9439. That would account, would it not, for the inequality in the dates of the promotions of the assistant-surgeons to the rank of second-class staff surgeons and regimental surgeons?—I do not think that there is any inequality, I think that seniority has been carried out almost without exception.

9440. Taking them out from the army list, the summary is this: that there is one officer above five and under six years' service who has got his promotion;—six, above six and under seven;—eighteen, above seven and under eight?—seven, above eight and under nine;—one, above nine and under ten;—that shows a very great variety?—Yes. The officer over five but under six years got his promotion because there were no seniors to him available at the time the senior on the spot had been advanced.

9441. They entered the service at different periods. I have taken the number of years' service which each had gone through when he got his promotion?—I had exhausted all those above that service.

9442. There are 14 assistant-surgeons, of whom 10 have had over ten years' service, four have had over eleven years' service, and still are assistant-surgeons?—They are eight in India, three in New Zealand, two at the Cape, and one in England, who refused promotion.

9443. Then I say that practically it does not operate to produce promotion by seniority?—Promotion does not take place by seniority in every case, as

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in the case of a death vacancy, there if a man is three years junior to fifty, he still gets the vacancy.

9444. Not always. I think you mentioned an instance at the Cape, where an officer had served for the necessary length of time ?—In a time of peace I cannot recommend a man for promotion who has not served the fixed period.

9445. I think you mentioned a case at the Cape when an officer stood next, but was a very young man, and although he had served the necessary time by regulation, you took somebody from another station ?—I do not recollect the case, but I do not say that it could not be done, because there are no fixed rules to bind. The object is to do justice to the department and the service. If in the case of an assistant-surgeon of six years' service I found that the assistant-surgeons generally were men of 12 or 14 years' service, I should not think it an act of justice to give it to an assistant-surgeon of only six years' service ; I should take an officer who was older in the service, and I should consider I was doing justice.

9446. You referred to the small hospital which has been established at Bath for the use of the Bath waters, have you had yet sufficient experience to be able to speak of the results ?—No, I cannot say that we have ; all I can say is, that hitherto it has not answered, but I am not prepared to say that that will be my ultimate opinion.

9447. For what diseases are the men treated there ?—Rheumatism, scrofula, secondary syphilis, and six or eight other diseases.

9448. There is no carbonic acid gas in the Bath waters or in any waters in England in any quantity ?—Yes ; the waters at Buxton contain carbonic acid gas.

9449. But there is no large proportion as there is in the waters at Aix-la-Chapelle ?—No.

9450. Therefore you do not anticipate the same effects from any waters in England as from any foreign waters ?—I do not. I do not anticipate any real good results from the Bath waters, as men who profess to suffer from chronic rheumatism persist in doing so, their object being to get out of the service ; they are malingerers, and in that sense they will not acknowledge that they derive benefit, and you cannot say that they do derive any.

9451. In short, a man who wants his discharge for chronic rheumatism you may set down as incurable ?—Yes.

9452. Would these waters be of any value for gunshot wounds ?—I do not think so ; it is said that they are valuable for contractions and all such complaints, but I suspect that it is mere assertion.

9453. As far as you have gone you have no reason to be hopeful as to the results of the experiment ?—No. A number of men who have been there finding it rather irksome to be subject to the discipline that they are under, have professed that they were quite well, and have been sent back to their corps, but on their return they were instantly in hospital again.

9454. You mentioned the other day that you thought the medical officers at Scutari who had been exposed to great danger had not been fairly treated, as compared with officers in the front, in the distribution of honours ?—Yes. I think that they have not.

9455. Is there any rule which would debar them from receiving honours, or was it merely that being out of sight and out of mind they were not recommended by Sir John Hall ?—No, it was not on that account. The statutes of the Bath require that an officer to be eligible for a C.B. must have "been "marked by the special mention of his name in the "London Gazette."

9456. Did they get the same promotion ?—Yes.

9457. It is stated that there is no man alive who was promoted at Scutari—is that so ?—No, there are several.

9458. Of course there were promotions in the front without death vacancies—promotions of staff officers for distinction in the field who got a step in rank ?—Very few of that description. I know there has been a complaint, and it was made at the Sebastopol committee, against me for sending out men to the Crimea who were senior to those of certain ranks in the Crimea. I hold that I did nothing but justice there, and I could not have done otherwise, or I should have done gross injustice. A number of regiments were recalled from Canada to form a division to go to the field, and the medical staff that existed in Canada up to that time was not required afterwards. Those medical officers were called home, and when they came home I considered it my duty to send them on to share with others the duty in the Crimea, with the fresh troops that came from Canada, and were proceeding to the Crimea to form fresh divisions. I thought it my duty to form a medical staff of the men in this country, and to send them along with them, so as not to give everything to the men who were out in the East, and I hold that that was positive justice. A charge has been brought against me that I acted with injustice towards the men out there, because I did not recommend the staff surgeons out there to be made deputy inspectors to form the staff for the new division.

9459. There was one case that you did not mention, the case of Mr. Anderson, who alleged that he was not sick at the time he was passed over ?—But he was sick, or the returns are false, that is all I can say about it. Mr. Anderson has no complaint to make ; he was passed over, and when he was promoted I succeeded in getting the Minister for War to give his sanction that those who were passed over on account of sickness should have their commissions antedated when they were able to be actively employed, and his, I think, was the very first case.

9460. Could you give to the Commissioners a copy of the statistics of the disease and mortality in the Crimea ?—That has not advanced sufficiently to enable me to do that.

9461. Is not the first part complete ?—No. There are five parts going on simultaneously, but there is no part complete ; there are different persons compiling the different parts.

9462. Will they throw much light upon the history of the disease and mortality in the Crimea ?—I should hope so.

9463. Had any instructions been issued with regard to the troops going out to India or to China, with regard to the premonitory symptoms of diarrhœa and cholera, or had you made any change in the system, or are the men left to report themselves ?—The men are never left to report themselves. Where cholera exists non-commissioned officers are stationed close to the privies in order to watch the men, for they will not report themselves, and if the non-commissioned officers see a man go more than once in a day they take him to the doctor.

9464. There is no preventive examination, is there, by the doctor ?—According to the cholera regulations which were issued when first the disease appeared in this country, in a pamphlet containing about 60 pages, it was required that they should inspect daily the men on parade. At that time a good many of the most judicious regimental surgeons wrote to say that they did not think it was a wise plan as it frightened the men, and that they should only occasionally go on parade as if by accident, and go down the lines with the colonel, so that they might not be supposed to be looking whether a man had cholera in his face or not, and in consequence it was given up, unless when the disease had appeared in a regiment, then it was carried out.

9465. (*Dr. Sutherland.*) Can you give in a copy of the regulations that were issued to the Chinese expedition ?—Yes.

9466. Is there any other point upon which you wish to make any observation ?—No, as I think I have already shown that the statements which have been advanced by certain medical officers to prove maladministration have been made in ignorance of the circumstances which rendered necessary the acts of which they complained. Ignorance in this respect

will always prevail, therefore the head of the department must expect that many of the measures he will have to adopt for the interests of the service will be misunderstood and even misrepresented. No regulations, however widely they may be promulgated, will in my opinion prevent dissatisfaction, for unless they are very broad and general they will constantly require to be broken, and as the reasons which will necessitate their being broken will not be generally known, the discontent under such circumstances will I believe be greater than it is said to be at present. There will now be a complaint against me with regard to a case that occurred yesterday. An assistant-surgeon was required to be appointed immediately to the 17th lancers; the proper man to be appointed is on sick leave. He is not very sick, nor is he well, but he is not fit to enter at once on the duties, and I am therefore forced to take the next man to him for the good of the service, and that man will complain of it, and very likely write to this Commission.

9467. If a man is sick it is quite clear that he cannot be employed?—If you put forth a printed regulation that the senior is to be taken, the second man would write half a dozen letters to me, and point out this regulation, and would take no reply from me as conclusive.

9468. Do you mean that the officer would maintain that he was not sick, but was fit to take the duty?—No; but that the officer ought to be made to join, or if he could not, when he became the man to be selected he ought to be put on half-pay.

9469. (*Mr. A. Stafford.*) Was there not a surgeon at Scutari who resigned his commission to avoid a court-martial, and who was afterwards restored to the service?—Yes, one sent in his resignation.

9470. Why was he restored?—On inquiry, it was found that there was no evidence that that man on any other occasion had been in a state of intoxication. There was no question that he was intoxicated, and to a very great extent. He was called upon to explain the circumstances, when he said that he went into a brother officer's room, and there he found something in the shape of sangaree, and he took a draught of it, that it was very hot weather at the time he took it, and that it completely overcame him, although not immediately, for he went out to walk, but when he was out he got so affected that he tumbled into a pool of water, and was there seen by Lord William Paulet. It appeared to me, if that was the only individual instance, in which indeed he was hardly the instrument, it was fair to inquire further into the matter before his resignation was accepted. He had been 14 or 15 years in the service, and, as far as I could say, had done good service. Lord Hardinge sent his resignation to me, to ask whether I thought it ought to be accepted. I went to him and told him that his explanation to me was, that it was the result of accident, that he had gone into a brother officer's room, and had partaken of something by which he was quite overcome, after he had gone out to walk; that he had never been found before drunk, nor was there any officer in the service who could say that he was addicted to drinking.

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9471. (*President.*) This was his own account of it?—Yes; I told Lord Hardinge this, and I said that I thought it was rather hard to accept his resignation at once, particularly as he had been required by the medical officer, who went to ask him whether he would resign or stand a court-martial, to write his answer at once, and say whether he would send in his resignation or stand a court-martial; he said that he had no friend to advise with; he was terrified and nervous, and he wrote to say that he would send in his resignation. I stated to Lord Hardinge that I thought it was hard, before we had ascertained that there were grounds for it, to take his commission from him, and I proposed that further inquiries should be made, and that he himself should make every effort to obtain certificates from officers who knew him, and that the Commander-in-Chief should authorize the adjutant-general to write to Colonel Yea, of the 7th Fusiliers, to ascertain what his character was, whether he was a temperate man or not, or whether he indulged in drinking, even in a moderate degree. Colonel Yea was removed, but he himself got a letter from two of the majors of the regiment, and from several other officers, and all those letters were to the effect that he was a very temperate man, and had never been seen drunk during the five years that he had served in the regiment, and had not even been excited by drink. Under these circumstances, I thought that I was not justified in telling Lord Hardinge that I thought his resignation ought to be accepted, in fact he ought to have another trial.

9472. In that way, by tendering his resignation, and that not being accepted, he escaped from the court-martial altogether?—I do not know that a court-martial would have found him guilty, if he could have shown that it was the result of accident. If he had been tried by a court-martial, I think he would have been acquitted—a thing which we do not wish to occur in the service.

9473. (*Mr. A. S. Stafford.*) Was any communication had with Lord William Paulet on the subject?—Yes; the Commander-in-Chief took upon himself to do that, and he was satisfied.

9474. We could obtain the papers relating to this individual, I suppose?—Yes, I should think so, from the Horse Guards.

9475. (*Sir T. Phillips.*) Can you say when the present scale of pay was adopted?—I think it was in 1840.

9476. Was the scale of pay raised then from what it had been before?—The pay of surgeons was diminished—that of others continued the same.

9477. What was the pay of the assistant-surgeon then?—7*s.* 6*d.* per diem under 10 years' service, over 10 years 10*s.*

9478. When was the present pay of the assistant-surgeons fixed?—The present has been the pay of the assistant-surgeon since 1804. Ten shillings a day were given after ten years' service in July 1830.

The witness withdrew.

Dr. JOHN SUTHERLAND further examined.

Dr. John Sutherland.

9479. (*President.*) Before going into the results of the Health of Towns Act on the civil population, have you any remarks to make on any other point?—Yes. Sir John Hall, in his evidence given before this commission on the 19th June, of which I have seen a corrected copy, has made certain observations on the proceedings of the sanitary commission in the East requiring notice. He states (5463) that the sanitary commissioners claim credit for reducing the sickness at Scutari in June 1855, but that they forget that Scutari was supplied from the Crimea, and that the sick had fallen off one half, and he goes on to attribute the immense reduction in the mortality, not to the improvements in the hospitals, but to the diminution in the number of sick sent from the Crimea, and to the character of the disease having changed. I have to state in reply that we claim no such credit, and that we actually do attribute part of the diminished mortality in the hospitals to the very cause to which Sir John Hall appears desirous of attributing the whole; that though the mortality had fallen by the end of June to less than a tenth part of what it was before our sanitary improvements were commenced, it had fallen to one half in the first three or four weeks of these improvements, without any material diminution in the number of

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sick. At the beginning of March 1855, when we first examined these hospitals, the cubic space per bed ranged from 850 to 1,000 cubic feet: this space would have been about enough, if the hospitals had been healthy; it was somewhat too small, because their sanitary condition had been neglected. In the ordinary meaning of the word, the hospitals were not overcrowded, and Dr. Hall's inference as to the diminished mortality being the result of the causes to which he attributes it, is, therefore, not borne out by the facts. The great hospitals at Scutari were magnificent buildings, apparently admirably adapted for their purpose, when superficially looked at, but when carefully examined they were found to be little better than pest-houses. The drainage of all the hospitals was in the highest degree defective and dangerous, the sewers were untrapped and unventilated; they were loaded with filth to such an extent, that during the first week of our sanitary works no less than 100 hand-carts of filth were removed from the sewers of the barrack and general hospitals. These immense sewer cesspools communicated with the interior of the hospitals by a large number of open pipes to the privies, and in certain states of the wind, sewer air was blown over this mass of filth directly into the atmosphere of the wards and corridors, for none of these sewers and privies had any other means of ventilation at that time except into the hospitals; and fever among the sick and healthy was the result. At Kulali, where the sanitary defects were even more serious, there were 50 open privies, and 200 cavalry horses, under wards and quarters, and fatal cases of fever had arisen, directly traceable to these causes. No sufficient means of ventilation had been provided in any of these hospitals. The walls and ceilings of both wards and corridors required constant limewashing throughout. The ward utensils were not removed speedily enough to prevent the air of the wards being tainted. There was an overcharged burial-ground close to the walls of the general hospital. It will be evident, at a glance, that to place either sick or healthy people in any number in these buildings, was to endanger health and life; even healthy people died in them from zymotic diseases, how much more likely to suffer were men in so susceptible a state of constitution as were those who came from the Crimea to Scutari, at the beginning of 1855, and yet we are expected to overlook the obvious consequences of such neglects, and to seek for the causes of the enormous mortality in the Crimea. The more susceptible the sick, the more they were sure to suffer from impure air, and the greater the care which ought to have been bestowed on the sanitary condition of the hospitals; the longer the hospitals were used the more unhealthy would they have become. Out of 6,471 remaining, and admissions in December 1854, the deaths were 60 per 1,000 during the month. In January 1855 the deaths were 147 per 1,000, out of 8,297 sick. In February the sick fell to 7,289, and yet the mortality rose to 182 per 1,000 during the month, while the deaths at Kulali, during the same month, had risen to 245 per 1,000, out of 1,229 sick, showing a progressive increase of mortality. During three weeks ending March 17th, the date when our sanitary works began, 5,522 sick yielded a mortality of 93 per 1,000; and at Kulali, 1,127 sick yielded a mortality of 118 per 1,000 during the same three weeks. After this date the outskirts of all the hospitals were cleansed and kept clean. All dead animals were immediately buried; peat charcoal was extensively used as a deodorizer for sewers, privies, and nuisances; the sewers at the barrack and general hospitals were opened, and their contents removed; flushing tanks were constructed over the heads of each of these sewers, and also at the latrines; and the whole drainage was flushed out several times a day by our own inspector. Ventilating panes, openings, or shafts were introduced into the wards. The windows of the privies, and of the corridors leading to them, were opened or removed, to prevent the effluvia entering the hospitals, and the sewers were trapped and ventilated. The beds were placed wider apart, and those in the corridors were reduced to one row, while the cubic space was fixed at 1,000 cubic feet per bed. Quicklime wash was constantly used to cleanse and disinfect the saturated walls of the wards and corridors of all the hospitals. The 50 open privies at Kulali were disinfected, closed, and sealed up, and the 200 cavalry horses removed. The wards over them were evacuated, as were also those over the stables at Scutari, in terms of our instructions. The regulations as to future burials, and for disinfecting the large grave-yard at Scutari, were carried out. It is hardly possible to conceive any more striking sanitary contrast than those hospitals presented before and after these measures were put in force. The air in them afterwards was purer than it usually is in most hospitals with which I am acquainted. Our own inspector, during the four months he was in charge of the external works, removed 5,114 hand carts of filth from the vicinity and from the sewers of the barracks and general hospitals; he buried 35 carcases, and flushed out the drains and latrines by the tanks 466 times. The works of construction were carried out in a most able manner by Major Gordon, R.E., and were most efficient in their operation. Any person conversant with the effect of foul air on the sick, will be able to appreciate the result of these measures on the susceptible cases sent from the Crimea, and the greatly increased chance of recovery they would have when the atmosphere was purified. Within the first three weeks of the improvements, the mortality in all the hospitals fell to one half of what it was during the three weeks before. In three weeks more it was down to one third. During the next three weeks it had fallen to less than a fourth, and in six weeks more it was less than a tenth. At Kulali the mortality fell to an eighteenth part of what it was when the sanitary works were commenced; but at that hospital the defects were the most serious, and the loss of life from them had been the greatest. The number of sick "remained and admitted" into all the hospitals for three weeks before the improvements was 5,522, a number capable of being accommodated with safety if the buildings had been in a good sanitary state. And during the last three weeks of the period, the "remained and admitted" amounted to 2,984, and that smaller number had the benefit of the improvements; but part of the immense reduction in the mortality was due, as we have stated in our report, to the less severe character of the cases sent from the Crimea. Dr. Hall further states (5465) that the nuisances at the hospitals had been detected, and that the recommendations made by us had been previously made by his own officers. It would have been more satisfactory if these recommendations had been produced here for the purpose of comparison with our own. Up to this present date I have no knowledge of the existence of any report setting forth either the evils or the remedies. There is, on the contrary, a letter from Dr. Hall to Dr. Smith, on the 20th October 1854, given in the report of the Sebastopol Committee, in which the hospitals are described as satisfactory, and not a hint is given that there were any sanitary defects to remedy. Statements productive of no practical result may have been made. It is even possible that recommendations sufficient may have been put in writing, but it is perfectly certain that the hospitals were in the bad sanitary condition we have described. We had no authority to inquire what recommendations had been made, nor who had neglected them. We had simply to deal with the defects as we found them. On this same subject, referring to the Crimea (5470), (5472), (5473), Dr. Hall says, that our recommendations as to the Crimea had almost all been made before, that we were told so and admitted it, and that it would have been fair if we had stated so. Again I reply, that we had to do simply with the sanitary defects as they existed. We had no authority to inquire into the nature of recommendations

which might have been made, nor why they had not been carried out. When we made our own we knew nothing of what had been advised by anybody else. General statements as to what had been recommended were made to me subsequently, but it was impossible to make allusion to these in our report without criticizing them. Some of the recommendations of which we were told we approved of, but from others, and from sanitary opinions, of which we were also told, we very decidedly differed. Our instructions wisely prevented us from interfering with these controversial matters, and tied us down to dealing simply with any defects we might find resulting from the existing sanitary system in the army. It is necessary at the same time to state, that none of the recommendations of which we heard verbally or otherwise were sufficient to have prevented the sanitary evils we were required to remedy, for none appeared to have been made before the evil occurred, and those that we heard of were incomplete. Being very desirous, however, of bearing testimony to good and efficient sanitary work wherever we saw it, whether such sanitary works were executed by commanding officers, quartermasters, or medical officers, we have done so unreservedly in our report, a far more pleasant duty than criticizing sanitary opinions or recommendations, which, however excellent, had apparently in many important cases produced no adequate result. At (5462) Sir John Hall states that in his opinion the sanitary measures we recommended in the Crimea had no effect in diminishing the amount of sickness and mortality in the army. In our report we have shown the extremely bad and neglected sanitary condition in which we found Balaclava, and the dangers accruing from it to troops and transports. That beautiful village had been allowed under the existing sanitary system to become a hotbed of pestilence as bad as the worst parts of our worst towns, so that fever, dysentery, and cholera, broke out in it, in its vicinity, and on board ship in the harbour. It does not appear that any steps were taken to organize any sufficient sanitary precautions for the town when it was first occupied. Filth, manure, offal, dead carcases, and imperfectly buried dead bodies, had been allowed to accumulate to such an extent, that we found on our arrival, in March and April 1855, that it would have required the labour of 300 men to have removed, before the warm weather set in, the local causes of disease resulting from not more than six months' occupation of this small area. We have shown in our report what steps we took to arrest cholera and other epidemic diseases on board the transports, and the remarkable success which followed the efficient carrying out of our instructions by the naval surgeons, for inspecting crews to insure immediate treatment in the premonitory stages, and for disinfecting, cleansing, and ventilating affected and unhealthy ships. We have described the sanitary works carried out by our own inspectors during four months, with labour amounting at one period to 150 men, and we have shown that all the measures we at first recommended were substantially executed as labour was forthcoming, and that Balaklava became so clean and healthy as to require little or no interference on our part for many months previous to the evacuation: we have commended the cleanliness of the camp when we first saw it, but we have described and illustrated by drawings the defective drainage and ventilation of many huts, and the dampness arising from heaping earth against the walls, and the results of such defects in producing zymotic disease amongst the troops; we have stated in our report the improvements we advised, and we have given copies of the sketches we sent to head-quarters to indicate their nature. We have shown how directly on our recommendation the 79th regiment was removed from a position so unhealthy that fever had attacked the bulk of the men, and that the disease was immediately arrested; of course we could not trace the progress and result of all our directions step by step; our duty was to see the improvements carried out, and this we did oftener by personal superintendence than by reference to head-quarters. It sufficed to us that the works were progressing, but when it appeared necessary we applied either personally or by letter to the commander of the forces. It was matter of regret that the progress was not more rapid, but it is always more difficult to remove than to prevent sanitary defects; we have further shown the great extent of deep-drained roads executed over the occupation in the autumn and winter of 1855, which had a most beneficial effect on the health of the troops, and we have attributed to these various sanitary improvements in connection with improved conditions as to diet, clothing, fatigue, &c., the progressive improvement in the health of the army. It is not for me to say whether these results would have taken place had the sanitary commission never gone out, but certainly the most serious evils had continued to accumulate up to the period of our arrival and they disappeared progressively afterwards. Sir John Hall has expressed to this Commission an opinion contrary to ours in regard to the effect of these sanitary measures on the health of the troops. The time I hope has gone by when it is necessary to combat such opinions; measures of the same nature as those carried out in the Crimea have been incorporated in numerous acts of Parliament, and paid for by rate-payers who recognize their greater than money value. Her Majesty's government, which has been instrumental in introducing these laws, contains men fully able to form a judgment as to the practical value of our presence in the East, and we have had the satisfaction of receiving their written approval with their congratulations on the success of our work.

9480. Did the sanitary defects that you observed at Scutari and in the Crimea differ materially from those observed in civil life at home?—No; they were of precisely the same character, modified in the Crimea by a higher temperature. The Scutari hospitals were like other large buildings in which no adequate means of drainage or ventilation had been provided, and the results to the inmates were similar to those observed in civil life, except in their greater severity from the worse character of the defects; Balaklava was like any other very neglected village, where no provision has been made for cleansing, draining, and removal of nuisances. There were some 20,000 men passing in and out daily, and no adequate sanitary arrangements were made for them. There were the transport animals of the army entering the town, and no means of safely disposing of the manure; there were cattle slaughtered for the town and shipping, and no slaughter-house; and there was a horribly offensive burial-ground, where the dead of the previous winter had been laid almost in water and hardly covered with earth, so that fragments of limbs and clothing protruded above the surface. The damp, unventilated, and undrained huts in some parts of the camp produced consequences very similar to those observed in cellar-dwellings at home. The half-buried huts of the Sardinian camp, however convenient in construction, furnished a large proportion of fever cases among their occupants.

9481. Will you state what steps have been taken of late years for improving the sanitary condition of town populations at home?—Since the publication of Mr. Chadwick's report, and since the Health of Towns Commission in 1842, great advances have been made in sanitary science, and also in its practical applications. Many towns have obtained local sanitary acts to enable the authorities to deal with the local causes of disease within their jurisdiction. The public health act has enabled similar provisions to be extended to a number of smaller towns and districts. The metropolis has now the benefit of a special sanitary act. Acts have been for some time in operation for the removal of nuisances not requiring the execution of permanent works; for the prevention of smoke; for enabling extra precautions to be taken to prevent epidemic diseases; for abolishing intramural burial and for establishing and regulating new cemeteries; for establishing baths

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and washhouses; and though last, not least, an exceedingly valuable act for the regulation of common lodging-houses introduced by the Earl of Shaftesbury, which has been of very great service in arresting disease amongst the humblest classes of society.

9482. Will you state, generally, the object of these acts?—The local and public health acts are chiefly intended to confer powers on local authorities to execute works for providing drainage, sewerage, water supply, and paving; the fixing the width of new streets, cleansing, removal of nuisances, regulation of slaughter-houses, common lodging houses, and similar matters. Powers of inspection are conferred, and officers of health and sanitary inspectors may be appointed. The nuisances removal and diseases prevention act gives powers for removing local causes of disease which can be dealt with at once, for cleansing houses, for providing extra medical aid, &c. Under the burial acts, intramural interments have been abolished over nearly the whole of England, and properly regulated cemeteries have been provided. The common lodging houses act enables the police or local authorities to inspect and to regulate such houses in matters respecting cleansing, lime-washing, ventilation, reduction of over-crowding, and other similar matters.

9483. Do the provisions in these acts differ in any respect practically from the sanitary regulations in the army?—Yes. They are far more explicit and practical in their character, and they contain a specific machinery by which defects, proved on inspection, and reported on, may be remedied as soon as practicable, and in many cases immediately; while in the army, reporting or recommending is apparently the only object obtained at present; what is wanted in the army is intelligent sanitary advice, and the means of giving it immediate practical effect. I do not consider, however, that the provisions in the civil sanitary acts are by any means perfect. They are directed mainly against external causes of disease, those outside dwellings; but except in the case of common lodging houses, they do not provide for the removal of sanitary defects, equally serious in character, connected with the interior of dwelling-houses, such as those arising from defective ventilation, over-crowding, want of cleanliness, and saturation of the walls with organic matter, &c. Until some further provision is made for dealing with these defects in the dwellings of the labouring classes, there will still be much preventible disease and mortality among them, even after the external conditions are improved.

9484. Have these various sanitary acts worked well in practice?—Sanitary legislation being only of very recent origin, at least in these days, and being moreover very difficult, it has been found necessary in practice to introduce amendments from time to time to meet classes of cases not previously provided for; but all things considered, the acts have already conferred great benefits on the working classes. The water supply of many towns, which is the key to all sanitary improvement, has been improved or provided anew; extensive works of sewerage, drainage and paving have been carried out. There are some towns in which the whole works have been completed, cesspools abolished, every house and cottage supplied with a water-closet, water pipe, and drainage, and the sewage applied to agricultural purposes. There are many towns in which these works are in progress, and every year will lead to their further extension. About 2,000 sanitary inspectors and officers of health are employed under the various acts I have specified. The removal of nuisances is more easily effected; public baths and washhouses are in operation in a large number of parishes with most beneficial results.

9485. Have sanitary measures been attended by a corresponding improvement in the public health?—Beyond all doubt. There are two tests of such improvement, namely, a diminution of sickness and a diminution of mortality. The former of these tests cannot well be applied statistically, and must be a matter of observation on the part of medical men. The latter, namely the mortality test, can only be of value when applied over a sufficient number of years, There has been a considerable falling off in the mortality of Liverpool since its sanitary acts came into operation. The city of London and the metropolis generally affords another similar example. Lancaster, Croydon, and other improved towns also show in some instances a very considerable diminution. There are even contrasts of improved and unimproved adjoining parishes; but if the falling off in mortality were even greater than it is, the time is too short to admit of positive deductions as to the amount. Besides, a certain time must elapse before drainage works can purify the soil from the filth with which it has been previously saturated. As to the falling off in sickness we have clear testimony, especially under the operation of Lord Shaftesbury's act. Mr. Assistant Commissioner Harris, of the metropolitan police, in a report to Sir George Grey just published, describes the common lodging houses, before the passing of this act, as "crowded and filthy, without water or venti- "lation, without the least regard to cleanliness or "decency, and hot beds of disease, misery, and "crime." Under the operation of the police inspection the evils attending such houses have been in a great degree removed or abated. "The accommodation "given in the registered houses consists of clean "beds and bedding, well-ventilated and lime-washed "sleeping rooms, well-cleaned kitchens, plenty of "water for all purposes, and good water-closets and "sinks, drained and trapped to the common sewer, "wherever such is available." In the metropolis, in a period somewhat exceeding five years, 700,655 visits of inspection have been paid to those houses, by day and night. From September 1851 to 1st of January 1857, the number of lodgers allowed to registered houses in the metropolis had been 91,106, and the total cases of sickness, for which the police had to obtain medical advice, had been only 469. The officers of health and district medical officers are unanimous in their opinion as to the great diminution of sickness from the strict sanitary precautions exercised in these houses, while zymotic diseases still prevail amongst the poor in their immediate neighbourhood. Similar testimony has been borne to the very beneficial operation of the common lodging houses act all over the country, and I may cite the experience obtained at Macclesfield as an illustration of the good which has been accomplished in the provinces. Referring to the common lodging houses, the town clerk says, "All "these pest-houses have given place to clean and "well-ventilated apartments," and he goes on to state that out of 115,000 lodgments in these improved houses during the year, "there were only nine cases "of sickness and four deaths, three of the latter being "children, and the fourth an adult who died from "the effects of imprudently drinking cold water." "No fever or other epidemic diseases have visited a "single lodging house;" no mere verbal description can convey an idea to those who have not visited the lodging houses before and after registration of the immense sanitary improvement effected under this act.

9486. What has been the result of these improvements as regards the prevalence of epidemic cholera?—After the epidemic of 1854, Sir Benjamin Hall directed an inquiry to be made into the results of sanitary improvements which had been carried out in circumscribed localities all over the metropolis, in the interval between the epidemics of 1849 and 1854. These improvements may be stated generally as consisting in flagging and paving of bad localities, covering pestiferous ditches, filling up cesspools, introducing sanitary improvements into groups of dwelling-houses, substituting water-closets with impervious pipe drainage instead of privies with brick drains, ventilating, cleansing, and lime-washing houses in unhealthy courts. And the results may be generally described as exemption from cholera, though the disease prevailed in the neighbourhood; the presence of the epidemic being shown only by the existence of a few mild cases of diarrhœa in the improved districts. In the common lodging houses under inspection, there were

61 deaths from cholera among 82,000 inmates, being about one-sixth of the cholera mortality proportionally over the whole metropolis in 1854. One remarkable instance of improvement was found to have occurred in Lambeth-square, Lambeth, which consists of 35 well-built houses, rented at 26*l.* a year each. These houses had formerly no water-closets, but they had open privies, opening into badly-constructed drains which passed under the houses, exemplifying on a small scale the drainage defects at Scutari. In 1849 six of the inhabitants of these houses died of cholera. They suffered much from epidemic disease, and the mortality was always high. In 1851–52, there were 80 attacks of typhus, scarlet fever, and small-pox, and 24 deaths among a population of 434. In 20 years 1,250*l.* had been spent unintelligently in endeavouring to remedy the evils. The case was referred to the first Board of Health, early in 1852, who recommended the removal of the existing drainage, and the substitution of pipe drains and water-closets, which cost less than 200*l.* for the whole square. The mortality has since fallen about one-half, the deaths from zymotic disease have fallen to one-seventh, and there was not a single death from cholera in 1854.

9487. Have you compared the cholera mortality in the years when the epidemic existed ?—Yes.

9488. Otherwise it would be valueless ? — The object of Sir Benjamin Hall's inquiry was to ascertain whether certain improvements in the metropolis had been attended with diminished liability to cholera, and it appeared that there was a falling off in this instance from 6 deaths in the epidemic of 1849 to none in the next epidemic in 1854, the intervening period, preceding the improvements, being filled up by other epidemic disease, such as fever.

9489. Was cholera prevalent in 1854 ?—Yes, all round.

9490. What have been the results of sanitary improvements introduced into the model lodging houses of the metropolis ?—The results, so far, have been very striking. These houses have no cesspools, they have all trapped water-closets, properly drained, plenty of water, they are free from nuisances, and have adequate means of ventilation. Some of those occupied by families are of large dimensions, and accommodate from 300 to 600 or 700 persons of all ages. Dr. Southwood Smith, in his lectures of epidemics published last year, has given the mortality in these houses for a period of from three to five years, from which it appears that the average annual proportion of deaths to 1,000 living was 12·6 to 13·9, a little above one-half that of the metropolis. I perceive by the last report of the Metropolitan Association, that the mortality in their houses during the last three years ending June 5th 1857, is stated at little more than half that of the motropolis. The statistics of these houses have not been hitherto kept with sufficient minuteness, but from information I have received from the association, it appears that the mortality in all their family houses among persons above ten years of age has not exceeded nine per 1,000 per annum. During the cholera of 1854, all of these houses escaped the epidemic, while it existed in the districts where they are situated, except in one family, consisting of 10 persons living in one of the Albert-street dwellings, in the basement, with about 276 cubic feet of space for each inmate, and this over-crowding led to four deaths among them from cholera.

9491. Is there any reason in your estimation why barracks could not be rendered as healthy as buildings of the classes you have described ?—None whatever. I have heard all the reasons usually assigned for the extravagantly high mortality existing in the army, and I can see no reason whatever why, if sanitary measures were applied with due intelligence to barracks, and otherwise, most of the excessive mortality in the army might not be swept away.

9492. What precautions have been usually adopted under the acts of Parliament for mitigating or preventing the ravages of epidemic disease ?—Besides the usual sanitary measures, namely, cleansing, removal of nuisances, lime-washing, ventilation, and the removal of inhabitants from infected houses and localities, the great principle which has been established in civil practice during the last 10 years is the paramount necessity and importance of the early detection and immediate treatment of the premonitory stages. This is especially necessary as regards cholera, for the early treatment of which it was the custom formerly to depend on opening numerous dispensaries, and warning the people from house to house of the necessity of instant application for medical aid in all cases of diarrhœa. These steps were found in practice to be of very little use, because although many cases of diarrhœa came under treatment, it was found that the cholera cases occurred in persons who had not considered the premonitory diarrhœa as of sufficient importance to call for immediate treatment. It has been established with regard to cholera, that important changes take place in the blood before the disease manifests itself; and that in the severest premonitory cases, those cases which, however apparently slight, are about to pass into cholera, the patient is apathetic, and will not apply for aid. This was in fact found to be a law of the epidemic, and hence the practice, which was adopted on my own recommendation, of sending the medical officer with medicines from house to house in infected districts, to inspect the inmates, and treat them on the spot. Wherever this practice has been efficiently carried out, there has been a great diminution in the mortality, while, on the contrary, wherever the sick have been trusted to make application themselves, the rate of mortality has been very high. Inspection has been used most advantageously in the army, either directly or by watching the latrines, but I am not sure that it was in use in the Crimea. We had no power to interfere with medical treatment; but when cholera appeared I wrote to Dr. Hall, recommending inspection of latrines or otherwise for the discovery of premonitory diarrhœa. We had it carried out as strictly as possible on board ship at Balaklava, and had only 90 cases of cholera altogether, in the whole transport service, during four months. It may be laid down as a principle, that wherever, during a cholera epidemic, soldiers are only warned to apply to the medical officer for relief in premonitory diarrhœa there will be a high rate of mortality; such, at all events, has been our uniform experience in civil life; and hence the power, under the contagious disease prevention act, to appoint medical house-to-house visitors, to inspect the people in affected districts, and to treat diarrhœa at once.

9493. (*Mr. J. R. Martin.*) Do you not think that had a skilful sanitary officer been appointed in the first instance at Scutari, and afterwards in the Crimea, the serious sanitary defects in the hospitals and at Balaklava, to which you have adverted, might have been prevented ?—Certainly. It appears to me that with a properly-arranged sanitary service an officer ought to have been detached to each of those places for special duty; and if a qualified sanitary officer had been sent out in the first instance, I think he could not have failed to detect the condition of the hospitals on the Bosphorus and, in addition to that, there would have been the means acquired by his knowledge, and by coming into immediate contact with the executive department, of carrying out the improvements that were desirable. The disadvantages attending the existing system are such that even though the medical officer understood what was wrong, and although he might recommend what was necessary to be done, he has no means of bringing his knowledge practically to bear upon the improvements. With regard to the Crimea, in the same way, I think that a sanitary officer should have been directed to see to the health of the base of the whole operations,—that duty should have been placed upon some sanitary officer.

9494. Do you agree with Sir John Hall that a separate sanitary officer would not be required for the army in the field, as the principal medical officer could

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do all that was required, and that such an officer would not be an advantage to the service ?—I do not agree with Sir John Hall's opinion ; I think that the principal medical officer of such an army as was in the Crimea had ample work to fill his hands. It would have been a great relief to Sir John Hall and a great advantage to the public service if a sanitary officer had been detached for the special purpose.

9495. Do you agree with him that a medical education usually supplies general principles of sanitary knowledge sufficient to enable a medical officer to deal with such matters as you have described ?—No, I think not ; what is wanted is not only knowledge, but practical experience—those are the two things wanted. Referring to the evidence that I have already given, I am of opinion that if the sanitary element were more introduced into the army it would be a very great advantage.

9496. Are you of opinion, considering the nature of the cases that came from the Crimea to Scutari and the susceptible condition of the sick, that extra care on all matters connected with the bedding and comforts for the sick should have been taken as well as extra sanitary precautions ?—Beyond all question ; I think that every circumstance likely to benefit men in that highly susceptible state should have been much more attended to ; the whole hygienic management of the sick, including bedding, linen, and sanitary precautions requires a far greater amount of attention than it has hitherto received.

9497. Referring to all that you have stated, and to all that you know of the sanitary defects of the arrangements in the army, does not the result prove this, that in all cases, and at all times, when certain kinds of reports were alleged to have been made, nothing was practically done ?—In some instances there were practical improvements carried out. There is a gentleman at this table who was zealous in making recommendations, Mr. Alexander, and his recommendations as to his hospitals were efficiently carried out. There are instances of sanitary works mentioned in our report in the hospitals themselves which presuppose on the part of the medical officers recommendations, either in writing or verbally, and those recommendations I can vouch for having been carried out ; whether they were made or not, at all events the work was done. In a number of other instances recommendations were made, and the work was not done. What is really wanted is, that there should be some means of rendering those recommendations practically available.

9498. In the instances of the great hospitals that you refer to, whatever may have been the recommendations previously made, nothing had been done until you went there ?—It is possible something may have been done before—we can only speak to what we saw—we were not authorized to make inquiry as to neglects.

9499. Referring to the great results mentioned by you as emanating from direct sanitary regulations at home, is it not manifest that without the services of 2,000 sanitary officers, as mentioned by you, the various acts would have proved, practically, failures ?—They are executive officers employed by local boards to carry out the provisions of the acts.

9500. To be practically useful there must be, not only sanitary regulations, but persons specially appointed to see that the provisions of the sanitary acts are carried out ?—Yes ; as to the army, most of that duty could be very well done by regimental surgeons, but there are cases, as I have mentioned, where detaching a sanitary officer would be of great importance. The army should be so provided that it could supply itself with its own sanitary inspectors. Suppose an army going to the East, and the director-general had a sanitary staff that he had perfect confidence in, he might select one inspector, and detach him, and say, You have the sanitary responsibility of the army, and *quoad hoc* he would be the sanitary officer, in the same sense that Dr. Smith sends a man to be the principal medical officer.

9501. (*President.*) I think you wrote a letter to Lord Shaftesbury which was published, in which you stated that you found nearly everything had been recommended by the medical officers of the army when you arrived in the Crimea ?—I should like to see the letter before replying to your question. If I recollect rightly, it had reference to certain recommendations.

9502. (*Dr. A. Smith.*) With reference to cholera, and the necessity for vigilance, in order to ascertain the premonitory symptoms, are you not aware that it has been usual in the army, with a view to detect cases of diarrhœa during the prevalence of cholera, to post sentries over the latrines or privies ?—Yes, and I am aware that that has been attended with most satisfactory results.

9503. Are you aware that there was circulated, before the cholera appeared in this country, a small book of instructions in which that was enjoined in all cases ?—No, but I know the fact, as to inspection having been made in certain instances at home.

9504. You were asked whether, if a sanitary officer had been placed at Scutari and at Balaklava, great advantage would not have arisen ?—Yes.

9505. With reference to that question, do you think that if they had been placed there, their recommendations would have been in the slightest degree attended to by the military ?—A recommendation involves in it the means whereby the work should be done. I think I guarded my answer in that way. At present, however willing a man may be to do his duty in this matter, however many recommendations he may make, there is no necessary connection between the recommendation and the execution.

9506. Are you aware that great efforts were made by the medical officers at Balaklava to get the streets cleared, the graveyards covered with an additional depth of soil, and all kinds of filth removed, and that no attention was paid to them. They said, "Yes, yes; when we have men to spare it shall be done ?"—I have no definite information on that point, we were not authorized to inquire why improvements had not been carried out. And even supposing that had been done, my point is, that if a sanitary officer had been on the spot at first, there would have been no necessity for correcting evils, as he would have prevented the whole mischief from the very beginning.

9507. (*President.*) He would not have allowed those things to accumulate ?—No. In taking possession of the base of operations, it is of primary importance to defend the base from the enemy and in like manner it is of primary importance to defend the base against epidemic disease.

9508. (*Dr. A. Smith.*) Do you think that if a sanitary officer had been placed at Balaklava his recommendations would have been attended to at the time of the bustle ?—I merely reply again, that my recommendation for putting a sanitary officer there involves in it the possibility of execution. I never contemplated placing a man in the Crimea whose recommendations were not to be listened to.

9509. Supposing that his recommendations were not listened to, what would have been the use of a sanitary officer in Balaklava though he had been there? —I blame nobody. I do not blame Dr. Smith for not sending a sanitary officer out ; but I say this, that if the sanitary element had been in the army—if there had been a sanitary officer sent out, and there had been a proper connection between the officer and the work, the officer should have been there.

9510. You were asked whether, if a sanitary officer had been there and another at Scutari, a great deal of good would have been effected ?—Undoubtedly.

9511. (*Mr. J. R. Martin.*) Does not the whole question of an army sanitary officer, to your mind, present the necessity of his being a highly-qualified officer, having the confidence of the government which appoints him ; and does it not necessarily arise from that, that where it is practicable his suggestions shall be carried into effect ?—I think you would require to

make some provision, the same as we have in our sanitary acts. An inspector, or officer of health, is an officer appointed under the act to take certain defined proceedings, and upon his proceedings there are certain other defined proceedings which take place. It is essentially necessary, in order to carry out the intention of the act, not only to appoint an officer, but to take care that the officer so appointed shall give advice, which advice shall be followed.

9512. (*Sir T. Phillips.*) How are you to legislate for things to be done in the Crimea ?—It could only be done by army regulation.

9513. Supposing sanitary regulations to be neglected, and disease to be manifested, what are the special types of disease that you would expect most likely to prevail ?—The special types of disease depend very much upon the nature of the defects, for instance, deficient drainage, filth, and over-crowding generally, predispose to epidemic diseases. Again, suppose you have over-crowding and defective ventilation with sedentary habits, as with tailors, there is a great tendency to pulmonary affections. Again, defective ventilation may act, almost by itself. It is quite possible to produce those evils in an otherwise healthy house, by simply over-crowding people together,

9514. You would expect the epidemic to take the form either of fever or bowel complaint ?—Yes, or dysentery or cholera.

9515. Those would be the most generally prevalent ? —Yes.

9516. (*Mr. J. R. Martin.*) They are the scourges of armies ?—Yes.

9517. (*Sir T. Phillips.*) You say that over-crowding dwellings may also produce pulmonary diseases ?—Yes ; even if those other defects of which we have been talking were not present.

9518. Are you not aware that diseases of the bowels and fevers produce a very small amount of the mortality in the army at home ?—Yes, but they produce a higher amount of mortality—the zymotic class generally produces a larger amount of mortality in the army than it does in civil life, but zymotic disease does not scourge an army here as it does in the field. At home zymotic disease is more prevalent in the army than it is in civil life.

9519. Take the diseases of the stomach and bowels in the foot guards, they are 5, and in the civil population 4, in one thousand ?—Yes.

9520. Fevers and eruptive fevers in the Foot Guards are 2·4, and in the civil population 1·2 ; and of pulmonary diseases you have in the army 13·8 and in civil life 6·3 ?—Yes; but you have fevers producing double the amount of mortality in the army that they do in civil life.

9521. The great source of disease at home in the army is of the pulmonary class ?—Yes ; there is a remarkable similarity between the causes of pulmonary disease in the army and in sedentary professions. The army suffers much less from the causes that produce zymotic diseases at home than almost anywhere else—it seems to suffer most from that class of causes that produce chest diseases.

9522. It seems that we must look for the correction of the evil at home in the direction of pulmonary complaints ?—Yes ; and in removing their causes you would at the same time cut off the mortality from epidemics.

9523. (*President.*) Do you look to the correction of pulmonary disease by improved ventilation ?—Yes ; and by diminishing over-crowding, by gymnastics, and other similar exercises.

The witness withdrew.

Dr. T. Graham Balfour examined.

9524. (*President.*) You are surgeon to the Royal Military Asylum at Chelsea ?—Yes.

9525. How long have you been in the army ?—Upwards of 21 years ; I was 4½ years on the staff, 8 years in the Grenadier Guards, and 9 in the Royal Military Asylum.

9526. You have paid considerable attention to military hygiene, and to sanitary science ?—Yes ; when I first joined the army, I was appointed by the Director-General to assist Dr. Marshall and Colonel Tulloch, in the preparation of a volume on the health of the troops serving in the West Indies. On the retirement of Dr. Marshall, I was associated with Colonel Tulloch in the preparation of the subsequent reports. In the course of that duty I was much struck with the great amount of mortality generally, and the large proportion of it which appeared to be caused by preventible disease. I subsequently had the opportunity of verifying my opinion on this point by watching the results which followed the adoption of various sanitary measures which we recommended in our report, and which were carried out to a greater or less extent. The results obtained from these changes fully confirmed my previous opinions, and led me to continue to make the subject my special study.

9527. Do not you consider that proper diet for the soldier is essential to maintain him in health and consequent efficiency ?—Most essential.

9528. Is the present diet of the soldier well-calculated to produce this effect ?—I think not ; it would scarcely be possible to devise anything worse calculated for the purpose, than the diet of the soldier was when I first joined the service. He had then two meals a day, breakfast and dinner ; and the period between dinner and breakfast the following day was 19 hours. His dinner consisted of perpetual boiled beef and broth. Subsequently the introduction of the evening meal, which had been pressed upon the attention of the military authorities by the medical officers for many years, effected a very great improvement. In other respects, his diet as laid down by regulation continues the same as at that period. It is monotonous to a degree. I have frequently seen, in a barrack room, soldiers, and especially the older ones, leave the broth untouched.

9529. Would it be possible to improve the soldiers' diet by infusing into it greater variety ?—I know practically it is quite possible to do so. When I was appointed to the Royal Military Asylum, I found the system of feeding the boys pretty much the same as that in the army, but not quite so monotonous, as they had baked mutton on Sundays, suet pudding three days in the week, and boiled beef on the other three days ; the meat was always boiled, but they did not get broth, the liquor being thrown away. They had abundance of food, their dinner consisting, on meat days, of 11 ounces of meat without bone, which is more than is given to the soldier, but they did not eat it with relish, and quantities of food were taken away to the hog tub. The boys were pale and feeble, and evidently in a very low state of health. Mr. Benjamin Phillips, a very high authority on scrofulous disease, told me, that when he examined the school, while engaged in preparing his work on scrofula for publication, he found the boys lower in point of physique than almost any school he had examined, even including those of the workhouses. After a careful examination of the dietaries of almost all the principal schools established for children in England and Scotland, I prepared a scale of diet, which was sanctioned by the Commissioners in December 1848, and, with a few slight modifications, is now in use at the asylum. The chief points I kept in view were, to give a sufficient amount of food in varied and pala-

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table forms, and without long intervals of fasting. The following are the old and the present scales of dietaries.

The same were delivered in as follows:

ROYAL MILITARY ASYLUM, CHELSEA.

Diet Table of the Boys of the Asylum in 1848.

Days of Week.	Breakfast at 8 A.M.	Dinner at 1 P.M.	Supper at 6 P.M.
Sunday, Tuesday, and Thursday,	Cocoa . . ½ oz. Sugar . . ½ oz. Milk . . ½ gill. Bread . . 5 oz.	Beef . . 11 oz. Potatoes . 8 „ Bread . . 5 „ Table beer ½ pt.	Bread 5 oz. Milk . . ½ pt.
Monday, Wednesday, and Friday,	Ditto	Suet . . 2 oz. Flour . . 8 „ Potatoes . 8 „ Bread . . 5 „ Table beer ½ pt.	„
Saturday	. . . .	Rt. mutton 11 oz. Potatoes . 8 „ Bread . . 5 „ Beer . . ½ pt.	„

Children under 8 years of age have 8 oz. of meat instead of 11 oz., and 4 oz. of bread instead of 5 oz.

Diet Table of the Boys of the Asylum, in July, 1857.

Days of Week.	Breakfast at 8 A.M.	Dinner at 1 P.M.	At half-past 3 P.M.	Supper at 8 P.M
Sunday .	Cocoa ½ oz. Sugar ½ „ Milk ½ gill Bread 5 oz.	Irish stew { beef, 6 oz.; potatoes, 8 „; onions, ½ „ Pudding { flour, 2 „; suet, ½ „ Bread . . 2½ „	Bread . 2½ oz. .	Bread 5 oz. Milk ½ pt.
Monday. .	. .	Boiled beef . 6 oz. Broth . . ½ pt. Greens . . 6 oz. Bread . . 2½ „	„	„
Tuesday. .	. .	Roast mutton . 6 oz. Yorkshire pudding { flour 4 oz.; suet ½ „ Bread . . 2½ „	„	„
Wednesday	. .	Irish stew { beef . 6 oz.; potatoes 6 „; onions . ½ „ Bread . . 2½ „	„	„
Thursday	. .	Roast mutton. 8 oz. Rice pudding { rice . 2 „; milk . ½ pt.; sugar . ½ oz. Bread . . . 2½ „	„	„
Friday . .	. .	Stewed beef . 6 oz. Rice . . 3 „ Treacle . . ½ „ Bread . . 2½ „	„	„
Saturday .	. .	Boiled beef . 6 oz. Potatoes . . 6 „ Broth . . ½ pt. Bread . . 2½ oz.	„	„

Children under 8 to have 4 oz. of meat instead of 6 oz.

9530. Did not the improvements in the cooking which you have mentioned involve a change in the kitchen, or was it already a good one, and fitted with the necessary appliances?—The kitchen was an old one, and no barrack kitchen in the kingdom would have lost by a comparison with it. There was an old oven in it of the kind known as the Rumford roaster, which was used for baking the mutton on Sundays, and for the serjeants and nurses during the week. There was also a square copper, about 4½ by 3½ feet, and 2 feet deep, with a fire underneath. Everything was thrown into this, the meat and potatoes in nets, and the puddings in pudding cloths. Everything was cooked in this. It would have been quite absurd to talk of making Irish stew or broth in it. I got over the difficulty by procuring eight large tin pails, like milk pails, into which the materials for broth or stew were put, and those pails were then placed in the copper, which was half-full of boiling water, forming very nearly what is called a *bain marie*. Among the advantages of this system were that of carrying the dinners hot into the hall, and cooking in various forms for different companies at the same time; and it was also impossible to singe or burn the dinner, or broth. The system was found to answer so well that when a new kitchen was built with steam apparatus, we continued to cook the dinner on the same plan.

9531. Did the improvement in the dietary greatly increase its cost?—On the contrary it saved nearly 300*l.* a-year in the feeding of the establishment. By introducing a greater variety, the boys took the whole of their food with relish, and I was able to get them into good condition by distributing the same amount of meat over seven days that they previously had in four.

9532. Were the results satisfactory?—The results were far beyond my expectation. Comparing the sickness and mortality in the establishment for the 10 years previous to my appointment, and for the eight years and a half that have passed since these alterations were introduced, I find that the sickness has been reduced by about one-third, and the annual mortality has fallen from 9·7 per 1,000 of the strength on the average of 10 years to 4·9 per 1,000 on the average of eight years and a half. This is not entirely attributable to the change of diet, though that was a most important means. At the same time there were other improvements introduced, such as increased space in the dormitories, improved ventilation, and abundant means of cold bathing—all of which are most important elements in preserving health.

9533. Do you think that the introduction of similar changes into the army would be followed by similar results?—Yes; as to health I have no doubt it would.

9534. (*Sir T. Phillips.*) What is the character of disease that produces the greatest amount of mortality amongst the boys at Chelsea?—Looking back to the previous period, I should say gastric fever and strumous disease.

9535. Those were the types formerly?—Yes.

9536. Have they been principally reduced by the changes which you have described?—Yes. I may mention another point with regard to health, that on the average of the 10 years the proportion of boys reported unfit for military service by the surgeon was 12·4 per 1,000 annually, principally on account of scrofulous cicatrices on the neck that would have prevented them wearing the military stock, and during the eight years and a half it has been reduced to 4·55 per 1,000. It is now very little more than one-third of what it used to be.

9537. (*President.*) Those scrofulous diseases at subsequent periods of life frequently become pulmonary?—Very often.

9538. Is it desirable to improve the cooking in the hospitals?—Yes; I think it very desirable to do so. In the Royal Military Asylum I had a cooking apparatus erected on a plan of my own. It is very compact and very economical of fuel, and has answered admirably. I believe Dr. Smith has been so much pleased with it, that he intends to adopt it as a model for all regimental hospitals at home; and Colonel Lindsay, of the Guards, who has paid great attention to the subject of cooking, saw it the other day, and stated to me that it was the most compact and most economical cooking apparatus he had ever seen.

9539. (*Mr. J. R. Martin.*) Does it comprise stewing as well as roasting and boiling?—Yes.

9540. (*President.*) Have you seen the plan for field kitchens which Mr. Bracebridge has published?—Yes, I have, and I think it would answer extremely well, provided he carries it out in the mode I have stated, of not passing the steam through the fluid to be cooked, but passing it into the water outside, the cooking being done as at Chelsea, in tin vessels, placed in the water. I think it would be very convenient.

9541. Is the cubic space allowed in barracks sufficient?—No; I think the amount of space allowed by regulation is too small, but the distribution, according to the ordnance returns which have passed through my hands, is, in many instances, very far below the amount stated in the regulations.

9542. Have you been in the barrack rooms at night, and in what state have you usually found them?—Generally insufferable from want of ventilation.

9543. You have seen the urine tubs in the rooms, how would you describe their state?—As beyond description abominable. Urinals and water-closets for night use should have been long ago introduced into the army. When I joined the Royal Military Asylum, I found the urine tubs used by the boys, and not merely as urine tubs, but for all other purposes. I obtained permission to introduce urinals and water-closets, in the proportion of one to every two dormitories. They have now been six years in use, and there is no unpleasant smell from them, and no inconvenience. Moderate care is required in cleaning the urinals, which is done with soft soap and a cane brush every morning. The water-closet introduced was Underhay's patent, of which this is a sketch (*producing the same*).

9544. Would not the urinals require an unlimited supply of water?—No; the system at Chelsea is, that the water is turned on half an hour after tattoo, and half an hour after reveillé. It is not allowed to run during the whole night; but where water cannot be supplied in sufficient quantity, the soldiers in barracks ought to be supplied with chamber pots.

9545. Colonel Chapman has said in his evidence, that if you have a good site for a barrack, he thinks the engineer and the military officer are quite able to determine on the plan of the barrack, without any assistance from the medical officer. Do you agree with that?—I think that opinion was formed without due consideration. Had Colonel Chapman referred merely to the materials and the mode of using them, or had it been a question relating to architect's or builder's work alone, I should have agreed with him, but it is one that bears an important reference to health. The engineer officers seldom reside in barracks, and when there, are not mixed up in any way with the soldiers. The regimental medical officers, on the contrary, are obliged to be constantly among them, and see the practical evils in the barracks; they hear the men's remarks and complaints, and are therefore well qualified to suggest improvements in barracks. I feel quite sure that if the engineer officers had one-tenth of the experience that medical officers have of the pernicious state of barrack rooms from want of ventilation, and if they had witnessed the use of the disgusting and indecent urine tubs, they would long ere this have improved the one and abolished the other. A soldiers' barrack room at present has not the least pretension to the comforts of an ordinary dwelling-house, but what is infinitely more disgraceful, there is not even an attempt made to introduce into it the decencies of civilized life.

9546. You have had great opportunities of examining the returns sent to the Medical Board, do you think that the nomenclature of diseases in them is a good one?—No; it is very far behind modern science. It is the same, with one or two trifling exceptions, as that adopted by Sir James Macgregor in 1815. It is true that deviations from the published list are permitted, if supported by the most respectable authorities, but I think that the department should keep up the list to the state of modern science, without trusting to the discretion of individual officers. I am of opinion that Dr. Farr's statistical nosology, or the classification of diseases adopted by the statistical congress of Paris in 1855, would be a great improvement upon that which is now in use in the army; the latter classification is given in the Compte Rendu du Congrés International de Statistique, and a summary of it at page 82 of the 16th annual report of the registrar-general, and it would come very much more up to the mark than that now in use in the department.

9547. Can you make any suggestions as to reducing the amount of writing of medical officers?—One obvious means of doing so would be to print the diseases in the returns, as was done in the sanitary reports originated by Colonel Tulloch and myself. A step in this direction was taken lately by having the names printed in the monthly returns, but this was not done judiciously. Instead of adopting the classification of diseases which is followed in the sanitary reports, a new classification of diseases was introduced, differing in no great principle from that which is used in the sanitary reports, but still differing enough in minor details to give all the trouble of rearranging it.

9548. Do you think that the medical register could be dispensed with in its present form?—No; but by the adoption of a good admission and discharge book, and of a record book, such as has been long in use in the Guards, much of the writing might be dispensed with. I can say from experience that the record book furnishes all the information necessary to enable the medical officer to make up his papers for Chelsea.

9549. Have you had any experience of the difficulties encountered by medical officers in their endeavours to carry out sanitary measures in the army?—Yes, during my service in the Guards I had opportunities of seeing this. Perhaps the best mode of illustrating the subject would be to give one or two instances. When I joined the Guards I was first quartered in the Tower. I found the Tower ditch was in a very disgraceful state, and the troops were constantly suffering from fever. I found that for many years the medical officers had been representing this as a cause of disease, but they could not get it drained, and the only reason we could ever find was, that making the ditch a dry ditch instead of a wet one, would interfere with the defences of the Tower. In 1842, typhus fever was very prevalent in the battalion of Guards quartered there, and the inhabitants on Tower Hill became alarmed lest the disease should spread to them; they applied the pressure of public opinion, in consequence of which the ditch was drained. This was followed by a very important change in the type of fever as it has prevailed since. (*See Appendix No.* LXIV.)

At the same time the water which the soldiers had to drink was drawn from the centre of the Thames just off the Tower, and passed through a coarse gravel filter and distributed to the cisterns. It was so full of animalcules and every other sort of filth, that I never washed myself in it without having it first boiled. We represented year after year this state of matters, but never could get any remedy applied until 1849, when the cholera was imminent.

9550. Was it used by the men for potable purposes?—It was the only water they had to use. In 1849, when cholera was threatening, this supply was at last got rid of, mainly, I believe, through the exertions of Captain Simmons, of the Royal Engineers, and the troops are now supplied with water for cooking and drinking from an artesian well at the Mint.

In 1845 the armoury was burnt down in the Tower, and a new barrack was erected on its site—certainly not before it was wanted—because the accommodation was very bad. The barrack was finished in the beginning of 1849; fever was then prevailing among the men, and cholera threatening. The surgeon applied to have the new barrack given over for the use of the men, and he got two rooms; he remonstrated through his commanding officer with the authorities, when he was informed that he could not have more given over to him, as they were full of stores—blankets, I believe. On suggesting that the stores might be put into the old barracks, he was told that they were a great deal too damp to put stores into, and it was only in consequence of an energetic remonstrance on the part of the commanding officer, which I believe reached the Duke of Wellington, that a board of officers was ordered to assemble, who recommended that the troops should be immediately moved into the new barracks.

For many years the medical officers represented that the white trousers as worn by the Guards, which were always cleaned with pipe-clay, and used to be worn from the 1st of May to the 1st of October, whatever the weather might be, were a source of disease; but the representations went for nothing till just before the late war broke out, when the men were at length put into cloth trousers all the year round. In the same way we protested year after year against the white waistcoat, or fatigue jacket, which was made of very loose serge, and the men were allowed to wear it in

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the barrack-yard at all times. I have seen them in a cold morning in the month of February at drill in the barrack-yard with the fatigue jacket on; notwithstanding many representations on the subject it still continues to be the authorized dress, and is still cleaned with pipe-clay, which I believe to be very injurious. The only thing done was that last year a very considerable improvement took place in the quality of the serge, and it is less objectionable now than before.

9551. (*Sir J. Clark.*) Do not you think that the state of our barracks is often sufficient to generate fever?—I think so: I have no doubt that the deficiency of ventilation is a very common cause of fever among the men. (*See Appendix, No.* LXV.)

9552. (*President.*) Can you suggest any remedy for the state of things which you have described, as to the difficulties with which medical officers are beset when recommending sanitary improvements?—I think, if it were laid down in the Queen's Regulations as the duty of a medical officer to offer suggestions in writing to his commanding officer, whenever he saw any means of promoting the health of the men under his care, that would have the desired effect, provided the commanding officer were also ordered, in the event of his not agreeing with the medical officer, or not carrying out his wishes, to forward the representations, with his reasons for not adopting them. They should be sent to the general officer commanding the district at home, or to the general commanding the troops, if in the colonies; and if the general did not adopt them, he ought then to transmit them in duplicate, one copy to the Commander-in-Chief, and the other to the Minister of State for War, stating his opinion on them, and his reasons for not acceding to the recommendations, and in that manner the authorities at head-quarters would be kept informed upon the subject. In the case of suggestions by the principal medical officer abroad, I think he should have power to consult with the engineer officer on all subjects, and if they could not agree as to the remedy, they should draw up a joint statement, to be submitted to the general officer; if he decided against the change, he ought to send home the whole of the documents, in the same manner as in the case of a regimental officer. I think that great advantage would be derived from following this course, which is nearly analogous to what was done in the case of the sanitary reports. When they were first introduced we found in many instances that general officers carried out sanitary measures before they sent home the complaint of the want of them, in order that they might be able to say that they had adopted the suggestions and done everything they could to preserve the health of the troops.

9553. (*Mr. J. R. Martin.*) Is it not the case that in our foreign possessions, notwithstanding the circumstance you mention, the defects remain very much what they were at the commencement of the present century?—No. During the last ten or fifteen years the defects have been in many cases removed, and in others ameliorated; but I think you would have a better chance of having the proper measures carried out, if you made it a part of the medical officers' duty on all occasions to represent them.

9554. It is an understood duty now, is it not, that he should report?—An understood duty is never well done—an ordered duty is.

9555. (*President.*) Have you any suggestion to make as to the pay and position of the hospital serjeant?—I think at present the pay and position of the hospital serjeant are very far from satisfactory, because, during the first seven years he is in the service, he only gets the same pay as a company serjeant, and the consequence is that all the best men are taken for staff serjeants, colour serjeants, and pay serjeants The hospital serjeant generally is chosen because he is a quiet, steady, but rather useless man, and I think it is very desirable to place him, as to pay, rank, and pension, in such a position that it would be an object for the best serjeants in the regiment to compete for the appointment. I think that if the hospital serjeant were placed on a footing with the quartermaster serjeant, as to pay, rank, and pension, you would then get exceedingly good men for hospital serjeants. It would be a very great improvement to give a medical officer a trustworthy non-commissioned officer to act under him.

9556. (*Sir T. Phillips.*) You stated that improvements have been introduced into the sanitary treatment of the army during the last fifteen years. Has that resulted in decreased mortality?—Yes; the decreased mortality was stated by Colonel Tulloch in his evidence.

9557. It is stated that the decrease in the mortality between the years 1830 to 1837, compared with 1837 to 1846, was from 21·6 to 20·4?—Yes, in the Foot Guards.

9558. Can you state whether the decrease has gone on since 1847?—I have, by direction of the president, applied for returns from the Foot Guards, from which I shall make up a statement, showing clearly whether there has been an improvement, and in what classes of diseases.

9559. I find, comparing the total deaths in the Foot Guards with the total deaths in the civil population of large towns, the difference is between 20·4 and 11·9, or a difference of $8\frac{5}{10}$?—Yes.

9560. You are aware that of the whole of that 8·5, 7·5 is represented by pulmonary disease?—Yes, it is.

9561. Bearing in mind that the great increase of mortality in the Guards, and in the army generally, is due to pulmonary disease, can you suggest to the Commission any cause that seems to you adequately to account for that disparity?—I think it is rather a combination of causes than any one; and I think that foremost among those, perhaps, you may put the over-crowding of barracks and the not ventilating them. I think the deficient ventilation of barracks has a very great deal to do with pulmonary disease in the army generally, and particularly in the Guards. They are quartered in a large town, and under those circumstances you ought always to have more cubic space for the men and better means of ventilation. I think another cause is the amount of night duty, which I have known to be very severe indeed in the Guards. At one time the men in the Tower had only one night and two nights in bed, alternately. I think that another great source of pulmonary disease among the Guards is the amount of syphilis, which I have not the least doubt, in men who have any predisposition to tubercular disease, is a very fertile cause of its being called into active operation.

9562. Would you state as your impression that the over-crowding of our soldiers is greater than the over-crowding of our working population in large towns?—The working population in our large towns are exceedingly over-crowded in some places, but in others they are not; if you go to the lowest class they are exceedingly over-crowded, but a little above them they are not so, nor have you them congregated in such masses in one room.

9563. Take your own experience of the effects of over-crowding on the civil population, are you able to say personally that it does not result largely in pulmonary disease?—I am not able to say that from personal observation, but I think when you get the working classes into large rooms well ventilated, as in model lodging houses, you find a great diminution in the mortality, and we know that the principal mortality of the country is from pulmonary disease.

9564. Are you prepared to state that that diminution has occurred now from improved lodgings?—Decidedly, there has been a decrease of mortality among the people occupying those lodging houses.

9565. Have you arrived at the conclusion that life has been of more value within the last few years than it was at the beginning of the century?—I do not think that one can come to that conclusion if you take it over the whole population, because model lodging houses have been carried out to a mere fractional extent, and not sufficiently to have affected the results upon the general population.

9566. I think that over-crowding was the first reason you gave, and night duty the second ?—Yes.

9567. And a particular description of disease was the third ?—Yes.

9568. Looking at the remarkable contrast between the cavalry and infantry, do you apprehend that the influences which operate on the cavalry are so distinct as to explain the disparity ?—I think they do to a great extent.

9569. Take over-crowding first ?—I am not prepared to show that the cavalry are not overcrowded ; but I think in a cavalry barrack you have more space for the men than in the infantry, from the regiment being smaller, and from the necessity of having greater space for stables.

9570. Take syphilis, would that more largely prevail in the cavalry service ?—In the cavalry the amount of venereal diseases of all kinds is 206 per thousand, and in the Foot Guards it is 250 per thousand.

9571. That would not largely eventuate in pulmonary disease ?—No ; but it might assist partially to cause the difference.

9572. (*Dr. Sutherland.*) Are the cavalry regiments generally barracked in flights one over the other, or are they barracked along the top of the stables ?—Very often they are barracked in flights, but the ground floor is the stable.

9573. How many flights are there in general in infantry barracks and in cavalry barracks ?—I suppose about the same number of flights ; I should say generally there is the ground floor, the first floor, the second floor, and sometimes attics.

9574. (*Sir T. Phillips.*)The soldier living over the stables is found to be an evil ?—I never heard a complaint of it, they have separate entrances.

9575. Does the service of the infantry in the colonies at all tend to increase the mortality in the infantry as compared with the cavalry ?—That would not be applicable to the Guards.

9576. Do you think it does as to the infantry at all ?—I think it must affect them a little ; there is a greater mortality at home from diseases of the liver, stomach, and bowels, among the infantry of the line than among any other troops. I presume that is very probably the result of colonial service.

9577. That would still leave a contrast between the infantry of the line and the Guards, and tend to render it still more inexplicable ?—I think it would, with this difference, that in London the Guards have far greater opportunities of dissipation of every kind than the Line in country quarters.

9578. Are there any means of comparing the disease or mortality of the Guards when out of London and when in London ?—Yes, there is a means of comparing the mortality of the Guards in Canada with the line in Canada, and it is very favourable to the Guards ; the Grenadier Guards at that time had a great deal of outpost duty. The mortality of the regiments of the line in Canada during the four years from 1838 to 1842 was 16·5, whereas, the mortality of the Foot Guards in Canada during the same period was 14·5.

9579. Did that include deaths by violence ?—Yes, it included all deaths.

9580. Did deaths by violence operate more upon the troops of the line than upon the Guards ?—Yes ; the difference was against the line 0·6 per thousand.

9581. Can you state the history of the scale of pay, when the scale of pay of the assistant-surgeon was settled at its present amount ?—I cannot tell you that now, but I will put in a statement of the various rates of pay at different periods back to about 1550. (*See Appendix No.* XIII.)

9582. (*Mr. J. R. Martin.*) When you contemplate that medical officers generally are to report upon sanitary deficiencies, do you mean that all are alike qualified to perform such duties; does the state of the medical department at any time warrant such a conclusion ?—I do not think that all medical officers are alike qualified to report on sanitary matters any more than they are on matters of medical treatment. You have great diversity in the talents, in the qualifications, and in the common sense of medical officers ; but I would call on every medical officer to report upon any point that he considered of importance to the health of the troops, and to suggest the remedies that appear to him best calculated to preserve it. I would leave to the higher authorities the carrying out of those recommendations or not according as they approved of them, always making them assign their reasons for not carrying them out.

9583. With all the superior circumstances affecting the profession in civil life, has it not been found a great advantage, nevertheless, to appoint special sanitary officers ?—I think that is more required in civil life than in the army. In civil life you have a sanitary officer appointed to a large town, but I think that in a regiment the medical officer, if he understands his duty, ought to look upon the prevention of disease as far more important, both to the men under his care, to the country, and to himself, than the mere cure of disease. I would appreciate very much higher a medical officer who kept his regiment efficient, than one who was remarkably successful in the treatment of disease which had arisen perhaps from his carelessness, or from ignorance of sanitary science.

9584. All that being admitted, it is found that in the French army they separate the two—and they have councils of health under the direction of the Minister-of-War ?—I was not aware that the two had been separated in the French army. I have an impression that you are mistaken as to their councils of health ; for instance, in the field they are generally composed of the three senior medical officers with that army ; or an inspector of hospitals is specially appointed to be the president of the *conseil de sante* with the two senior medical officers acting with him ; but they are not solely reserved for sanitary investigations, as they have the inspection and the superintendence of the hospitals, as well as the supervision of the sanitary details.

9585. They are selected officers for all their functions ?—Undoubtedly.

9586. (*President.*) Their functions include the prevention of disease ?—Yes.

9587. (*Dr. Sutherland.*) It would not be inconsistent with the army sanitary service that there should be inspectors set apart for the express purpose of inspection, when an occasion arose, as in the case of the appearance of epidemics, an army taking the field, or general hospitals being established ?—It would not be the least inconsistent, I think it would rather be a more full development of the system, that upon occasions of emergency or occasions of great expeditions you should appoint an inspector for that particular duty, because then the duty would be as much as any one man could take upon himself to discharge.

9588. (*Mr. T. Alexander.*) Generally speaking you would combine the inspecting officer with the sanitary officer ?—I think I would generally combine them, except in the case of an army in the field.

9589. (*Sir T. Phillips.*) As to an army in the field, the value of the sanitary officer would be not so much as to the selection of a particular spot as the removal of all elements of disease ?—I think he ought to be consulted on both, so far as strategical reasons would permit ; you may often require to place troops in a very unhealthy position, to which the sanitary officer would object, provided the troops could be equally well placed elsewhere; but if it were imperatively necessary that they should remain there, then his attention would be directed to removing the causes of diseases.

9590. (*Mr. J. R. Martin.*) He should be the medical topographer of the army ?—Yes.

The witness withdrew.

Adjourned till Monday next at Twelve o'clock.

Monday, 20th July 1857.

PRESENT :

The Right Hon. Sidney Herbert, M.P.	Sir Thomas Phillips.
A. S. Stafford, Esq., M.P.	Sir James Clark, Bart.
Sir H. K. Storks, K.C.B.	J. R. Martin, Esq., F.R.S.
Dr. A. Smith.	Dr. John Sutherland.
T. Alexander, Esq., C.B.	

President, The Right Honourable SIDNEY HERBERT, M.P.

James Mouat, Esq., C.B.

20 July 1857.

James Mouat, Esq., C.B. examined.

9591. (*President.*) What rank do you hold in the service ?—I am staff-surgeon of the first-class, and local deputy inspector of hospitals, on half pay.

9592. Where have you served ?—In India, the Mediterranean, and the Crimea.

9593. In the Crimea had you ever to create a hospital ?—I was called upon to organize a hospital for the reception of the wounded in the field.

9594. Did you find any difficulties in so doing ?—No difficulties on the part of the medical authorities.

9595. Did you meet with any difficulties on the part of any other department whose co-operation was necessary to you ?—No intentional difficulties, but difficulties certainly such as might have been prevented by pre-arrangement.

9596. What things could you not obtain ?—It appears to me that when called upon to organize a hospital of that kind, with no materials for building a hospital, that all the appliances necessary for the hospital ought to have been placed at my disposal, and as far as the medical authorities were concerned they were placed at my disposal ; but I was called upon to make a hospital out of huts not intended for that purpose. I had no means of doing so. Two carpenters were placed at my disposal, but it was necessary to ventilate that hospital, and to put up shelves. All that should have been done by the engineer department, and should not have been left for me to do ; that occasioned a considerable trouble, difficulty, and waste of time.

9597. Had you any difficulties as to the supply of hospital furniture ?—None whatever as to furniture, there was a slight deficiency in two or three trifling things.

9598. At what period was this ?—This was in the spring of 1855.

9599. Did you get beds ?—Yes, everything of that kind was sent to me ; but it was the conversion of buildings not intended for a hospital into a hospital, that ought to have been done by the engineers department.

9600. Your view is, that the medical officer ought to find all the material appliances for a hospital ready to his hand, and that he should only exercise his own professional duties ?—Exactly so.

9601. Would you carry it further and say that the same thing ought to be done in peace, with regard to hospitals ?—I think that hospitals ought to be organized into classes, and that a certain amount of materials of every description whatever, according to the different class of the hospital, should be ready, and there should be a list of them, and the medical officer should only have to apply for them and have them placed at his disposal, medicines, appliances, and everything ; and that he should not be called upon to say how much do you require of this, that, or the other, but a fixed scale ought to be laid down and if he wants anything additional he should apply for it.

9602. There is an equipment now laid down, is there not, for a general hospital in war, or for a brigade or a divisional hospital, or even for a battalion ?—I believe there is now, but I do not think there was at that time.

9603. At any rate, if it was laid down it was not producible ?—I had to make special requisitions for nearly everything I wanted, and to carry them myself and get them counter-signed, and go direct to headquarters to save time. No difficulties were offered to my obtaining things, but when I applied for them I often could not get them.

9604. Did you apply direct to Sir John Hall ?—Yes, through him, and he countersigned my requisitions, having satisfied himself of the necessity of them.

9605. What was your rank then ?—Staff surgeon of the first class and medical inspector of this hospital.

9606. You had no deputy-inspector between you and Sir John Hall ?—No. It was necessary to build a cooking shed and to fix boilers for the purpose. In order to fix boilers I required bricks. I made out a requisition for the bricks. I made a guess as to the quality. Without any difficulty the requisition was signed, and I was told, certainly you can have them. I rode down to Balaclava and I was there told I could not have them as they were wanted by another department, by the commissariat to make ovens, and I was thrown over. I applied again and the same thing happened. I wrote then a letter pointing out the difficulties I found in getting them, at which I expressed my surprise, for I was aware that other departments were able to get that which I could not get. Sir John Hall forwarded this letter to the assistant quartermaster-general, who replied politely in a note that bricks should be given, but that it was not in their province, strictly speaking, to supply bricks.

9607. (*Sir H. K. Storks.*) I suppose bricks are not quartermaster-general's stores, properly speaking ?—That was the answer I received.

9608. (*President.*) Do you know what the practice in the Russian service is, as to the formation of hospitals?—As far as I could ascertain and remember from conversations, everything was done, in the shape of buildings, and everything connected with them, by the military department, the military medical equipment.

9609. Those instances have been instances in war?—Yes.

9610. Have you ever found in peace any difficulty in getting your recommendations attended to in regard to the construction of hospitals ?—Yes, on two or three occasions.

9611. You served in India ?—Yes, nearly ten years.

9612. Did you find a difficulty there in that respect ?—Yes, there was a difficulty there.

9613. Can you give any instance ?—Yes, I can. In the year 1844, I was in charge of my regiment, it had been a very sickly season, and we had lost a large number of men from dysentery, when the inspector-general of hospitals came round, I had some conversation with him on the subject, and I told him that I had drafted a letter which I should like to show him before I sent it. I showed him this letter, and he advised me not to send it. I asked him why, and he said in the first place it had been represented already, and next there had been already a great deal of representation on this subject with his predecessor, and he had received a hint we had better keep quiet, as if we gave the authorities much trouble, his (the inspector's) appointment in all probability would be abolished.

9614. (*Sir H. K. Storks.*) Was he in the company's service ?—No, in the Queen's service.

9615. (*President.*) The threat came from the company's service, I presume ?—Yes ; and I did not forward the letter in consequence.

9616. (*Sir T. Phillips.*) What were the wants which you had to represent ?—With reference to the sanitary position and locality of the hospital, and a suggestion was made that an experiment should be tried of removing a company from the hospital to another position to see whether the effect of removing this company would be satisfactory as an experiment ; it was not done at that time, but it was done subsequently, and it turned out to be most satisfactory, that is to say the company when removed from their unhealthy locality lost only one per cent. per annum, while before they had lost seven and eight per cent.

9617. Your requisition was not for work to be done at the hospital ?—No, simply a letter pointing out this and recommending that an experiment of this kind should be tried. This occurred eight or ten years ago, and I believe they have since come to the determination to build another barrack. These kind of representations had been going on for twenty years.

9618. (*President.*) To come nearer home, and to things which have occurred to you, you have been quartered in Ireland, have you not ?—Yes.

9619. Did you ever know an instance of a hospital in Ireland without any lavatory for the men ?—When the regiment in which I served arrived in Clonmel, there were no means of ablution for the men of that regiment—the 9th, eight hundred in strength, except two pumps in the open air, one for the hospital, and one for the men of the regiment. There was a little distance between them, and as soon as I discovered this, (we moved in winter, and the regiment was not very healthy.) I made a representation on the subject to the commanding officer, pointing out the danger of men exposing themselves. I had observed them in their shirt sleeves in the open air getting wet through. One man had to wait while another was washing. My commanding officer perfectly concurred with me. I pointed out that there were two or three unoccupied sheds, which at a very trifling cost could have been converted into ablution rooms. The commanding officer agreed with me, and he forwarded my letter to the major-general commanding the district. The answer that I received from the major-general commanding the district was to this effect, the lieut.-colonel commanding the 9th regiment was directed to inform the surgeon that he was extremely surprised to learn that the men of that regiment were unable to put up with the same means of ablution which had served every other regiment quartered there before them, and I believe that the men in that barrack are pumping upon themselves to this day.

9620. (*Sir H. K. Storks.*) How long have you been in the service ?—Eighteen years.

9621. Where did you first serve ?—In India ; the last eight years I was at home (except 18 months in the Crimea).

9622. Did you ever know a barrack eighteen years ago in this country that had an ablution room ?—It was not the case formerly, I know, but for many years past they have been gradually used.

9623. I said eighteen years ago ?—I am speaking of eight years ago.

9624. (*President.*) You were quartered in Galway, were you not ?—Yes.

9625. Can you give any instance that occurred in the hospital there ?—Yes, the hospital there in a sanitary point of view was situated in the most unhealthy part of the town,—in a densely crowded seaport town,—it is almost in the centre of the town. There are two barracks, the castle barrack and another. Nothing could be worse than this hospital ; there were high walls all round it and no air could penetrate into it. One of those high walls was a public nuisance, it was a public cloaca for all the people in the neighbourhood, and various representations were made to the civil authorities and sometimes it was a little better, but it was impossible to keep it so without placing a sentry over it, but that could not be done. It was so bad that erysipelas and other diseases prevailed, and I made a representation on the subject to my commanding officer, who agreed with me perfectly. I felt so satisfied about it that I would not have undertaken to perform surgical operations ; a patient would not only have stood a bad chance of his life, but he would have died probably ; the inspector-general of hospitals came down and looked at it, and I was told that a new barrack was about to be erected, and that a good hospital would be erected in connection with it ; the hospital would be first erected, as I was informed, and it would take some years ; this was some years ago, and it is not yet erected. I therefore thought it advisable in the mean time to provide a dwelling house which had been used as a cholera hospital admirably situated with a large garden round it at a trifling rent of 40*l.* a year. I suggested that it should be hired and used for the troops quartered in Galway until the new hospital was built, the commanding officer agreeing with me, and the inspector-general agreed with me ; it was referred to the barrack department and it was thrown over.

9626. (*Sir T. Phillips.*) When was this ?—Five years ago.

9627. (*President.*) Did you serve in the Crimea, down to the end of the war ?—Yes.

9628. When you left, to what place was your regiment ordered ?—I was not a regimental officer then.

9629. Do you recollect any instance in which an interference took place on the part of the commanding officer to prevent the medical officers accompanying a regiment ?—I recollect an instance which was referred to me officially. When the 82nd regiment was ordered to embark, they were to proceed in a man-of war, and it was found, that there was not accommodation for all the officers to proceed with it, and the commanding officer under those circumstances omitted two officers of the regimental staff, the dispenser, and one assistant-surgeon, sending one surgeon, and one assistant surgeon with the regiment—the surgeon did not learn this until they were just about to embark. He came to me, and made a representation, which I immediately felt it my duty to forward, with a remonstrance to the brigadier commanding, who agreed with me, and one medical officer was ordered to be substituted for an ensign, I think, but when the colonel learned this arrangement had been made, he wrote a letter to the general commanding, stating that his arrangement had been interfered with, and it was altered again, and the medical officer was left behind, in spite of my remonstrance.

9630. What was the result ?—That the medical officer was left behind, and my remonstrance was not attended to.

9631. (*Dr. A. Smith.*) And the dispenser also ?—Yes, the assistant-surgeon and the dispenser.

9632. (*Mr. A. S. Stafford.*) Did the regiment embark with one surgeon and one assistant-surgeon ?—Yes.

9633. (*President.*) Their view was, that one ensign was of more importance than one assistant-surgeon ?—I presume so. The commanding officer seemed to think that the surgeon had no right to communicate

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with me on the subject. I told him that it was the custom of the service, to communicate with the head of the department on professional points, more particularly when it was a remonstrance on any subject of duty.

9634. (*Sir T. Phillips.*) Where was the regiment sailing ?—It was coming home. My instructions were from Sir John Hall. I was left in charge as principal medical officer of the army, on the embarkation of the remainder of the army, after the principal medical officer had gone, my instructions were that all regiments were to embark as complete as possible. I merely wrote to say, that as the whole regiment embarked, all the medical staff should accompany it.

9635. Where was the difficulty of providing an additional officer to go on board ship, with a regiment of men ?—It was a man-of-war, and the accommodation was not enough.

9636. (*Mr. A. S. Stafford.*) What was the name of the vessel ?—There is no difficulty in ascertaining it.

9637. (*President.*) Was it a two-decker or a three-decker ?—A two-decker.

9638. Have you considered the question of the pay of medical officers ?—I consider that the pay is quite incommensurate with their position and attainments.

9639. Do you object to the minimum pay in the first two years of the rank ?—I consider the minimum pay in the first two years a peculiar hardship, and the more so as we were not led to believe, when the warrant was issued, that it was so intended. It is so worded that it is capable of a double interpretation, and it was interpreted against us.

9640. What warrant do you refer to ?—I do not know the date of it, but it had reference to the minimum pay on attaining the rank of surgeon. I think it was the warrant of 1840. It appeared to be a boon, but in reality it was a positive injustice.

9641. (*Sir H. K. Storks*) Will you explain what you mean by a double interpretation ?—The warrant appeared to have this meaning : that if an officer had attained his promotion to the rank of surgeon before he had served ten years, he was to serve until he had attained ten years service on the minimum pay, whereas it appears, no matter when he obtained his promotion, if he obtained it after 12 or 14 years, he still had to serve two years. It bore upon me very hardly. I was within six weeks of ten years' service when I received my promotion. I imagined that I had to serve six weeks, instead of which I had to serve two years, minus six weeks. The warrant would lead you to suppose that when you had served ten years and received promotion you were entitled to 15*s.* a day, whereas you must, no matter when you obtain the promotion, serve two years to obtain the full pay of your rank.

9642. (*Sir T. Phillips.*) What was the date of your appointment ?—1838.

9643. (*President.*) Do you propose to make any difference in the pay of the assistant-surgeons ?—Yes ; I would bring it up to 10*s.* a day.

9644. With an increase ?—Yes, after five years' service.

9645. Of how much ?—Of 2*s.* 6*d.*

9646. Have you made any scale ?—No, I have not. I have here a paper which I suppose has been placed before the Commission, and I agree with it as far as the junior ranks are concerned. I do not pretend to offer any opinion upon the senior ranks.

9647. Upon the subject of retirement have you any suggestion to make. Are you in favour of compulsory retirement ?—Yes ; after a certain period of service.

9648. Service and age ?—Yes, both ; 65 is the maximum age, and 35 the maximum of service.

9649. After that the retirements should be compulsory ?—Yes ; whatever grade they may have attained at that time.

9650. I suppose you would make it compulsory either at 65 years of age, or at 35 years service ?—Whichever may happen to be first.

9651. (*Dr. A. Smith.*) You would have a constant change in the senior officers in that way if you compelled every man of 35 years' service to go on half-pay ?—Bearing in mind the habitual amount of foreign service, the chances are that most men will be more or less unfit for active duty after that period of service. I think that a large portion of foreign service adds to a man's age.

9652. (*Sir T. Phillips.*) You would make retirement compulsory under 60 years' of age ?—Yes, if a man had served 35 years.

9653. (*Mr. T. Alexander.*) You would make retirement the same for both ranks ; both for the executive and the administrative ranks ?—I think that an administrative officer may remain longer than an executive officer.

9654. What period of service would you say for the executive rank ?—I do not think that any officer could be an executive officer in the field after 60 years of age.

9655. (*Mr. A. S. Stafford.*) Do you agree with resolution 6, which is, that "retirement be optional after 21, and compulsory from regimental and second-class staff surgeon duty from 35 years ?"—Yes, I do, and that retirement may be optional after 21 years ; I would make it 21 and 25.

9656. (*Sir T. Phillips.*) If you made stepping stones of five years would it not be convenient to make retirements of five years ?—It is so much dependent upon a man's health. No two men are exactly alike, therefore I give those two periods of 21 and 25 years, and I would give him the option.

9657. (*Mr. T. Alexander.*) You would not give the same rate of retirement at 21 as at 25 ?—No ; unless he retired from ill-health ; if not from ill-health I should make a difference.

9658. Do you agree with the recommendation of the director-general that it should be $\frac{5}{10}$ths. at 20, and $\frac{7}{10}$ths at 25 years ?—I have not made any calculation.

9659. (*President.*) As to relative rank you wish the relative rank of the medical officer to be substantive, so far as carrying with it the advantages that it gives to a combatant officer ?—Yes, the real substantial and substantive advantages of that position, in every respect the same as the engineers and the other scientific branches of the army, without absolute military command.

9660. (*Sir T. Phillips.*) What do you mean by absolute military command ?—The command of men on parade.

9661. What command of men is the surgeon to have ?—I do not wish him to have any command ; I said without command.

9662. (*Sir H. K. Storks.*) You mean relative rank ? —Yes. I think that medical officers feel deeply the slight that the want of that right position exposes them to. I have heard a discussion in a mess-room whether it was competent for a medical officer, though they were nearly all boys but himself, to notice any breach of discipline, or even to put an officer under arrest ; and I have known another medical officer pulled up for not doing it.

9663. (*President.*) With regard to funeral honours in the same way, would you extend them to medical men ?—Yes. I can mention a most painful illustration of that, that took place in the Crimea. A medical officer, a staff surgeon of the first class, died, and it was my duty to make the necessary application to the military authorities for his funeral. I applied to the brigadier for the usual funeral party, the band and a firing party, and the commanding officer of the 82nd regiment not only refused his band, but refused the firing party also. Col. Robertson, I think, was the commanding officer's name. The brigade major was the channel of communication, and it went from him to the brigadier.

9664. Do you consider that promotion should be by seniority in the lower ranks, or by selection ?—I think that up to the grade certainly of regimental surgeon and perhaps staff surgeon of the first class, the promotion should be by seniority.

9665. That would be an alteration from what it is now ?—At present I believe it only extends to regimental surgeons.

9666. And to second-class staff surgeons ?—Yes, they are the same virtually.

9667. Is it seniority upon the army list ? Does every man go up in his turn ?—I believe, for the convenience of the service, the man is usually promoted who happens to be the senior on the station.

9668. (*Sir T. Phillips.*) What is your proposition ? —I think, if possible, it should be extended throughout the service. As it at present stands, the convenience of the service is consulted to the disadvantage of the medical officers.

9669. (*President.*) At present, the senior on the station is taken, in case of a death vacancy. The senior officer on the station gets the promotion. What you would do is, to assimilate the two, and take as a rule the present system under which a vacancy is made by promotion ?—I think so.

9670. Do you intend to include the first-class staff surgeon in the seniority system ?—Yes, I think it might be done.

9671. Is that rank one that is very important to be retained ?—I consider that rank, or a substitute for it, is necessary.

9672. For what purpose ?—There are certain appointments that can scarcely be considered as a charge for a deputy-inspector of hospitals; it would require an officer of an intermediate grade to perform those duties.

9673. Could not you make that officer an inspectorial officer ?—I think that that is an objectionable kind of rank.

9674. Is the rank of a staff surgeon of the first class an executive rank, or an inspectorial rank ?—I think it ought to be executive. They are generally men at an age at which they are not too old for those duties, but at present, as it is, I do not think that it is always so. I think that they are liable to be employed in both capacities.

9675. (*Mr. T. Alexander.*) Do you not think that rank narrows the field of selection for the higher grades ?—Yes, it has that effect.

9676. (*President.*) There are not above 33 or 34 first-class staff surgeons for the director-general to select from ?—I think that that rank or an analogous one should exist ; I object to the title.

9677. (*Sir T. Phillips.*) For what purpose do you think that the rank ought to exist, assuming the number to be so small ?—Unless an alteration is made in the present arrangements of the army, as long as there are recruiting districts, and districts where the duties are not very large, I think there ought to be an officer of an intermediate grade to perform that duty.

9678. What is the duty that you assign to a first-class staff surgeon ?—I think that he ought to be an executive officer. In a large hospital he ought to perform operations, and he ought to take a certain number of cases under his treatment; I think it is very desirable that he should do so.

9679. For any other duty than the hospital duty is he necessary ?—Yes, for recruiting districts.

9680. (*President.*) Is it not important that all inspecting officers should take a certain portion of professional practice to keep themselves up to the mark ?—Not unless they are in charge of a hospital. I do not think it would work well for an inspector of hospitals to go into a regimental surgeon's hospital and take charge of some of his cases.

9681. I mean in his own hospital—in a general hospital ?—Then I think it would be to his advantage. As it at present stands he is merely consulted; he is supposed to exercise a general supervision, and does often over the treatment of cases, but delicacy very often forbids him from actually interfering in them.

9682. Practically the supervision is more over the arrangements ?—Yes.

9683. (*Sir T. Phillips.*) Is it not the case with the consulting surgeon in a hospital in civil practice that he does not operate himself, but is consulted by the ordinary surgeon ?—I believe that is the case in civil hospitals ; the consulting surgeons are men generally who have retired ; it is not the same in the army.

9684. (*President.*) In the balance for or against the retention of the rank, what would you say ?—I would retain the rank or an analogous one, but I would alter the name, (I think the title is objectionable) and make them executive wherever they could be made so, and administrative only when it was absolutely necessary to make them so.

9685. In the rank above you would promote by selection ?—Unquestionably.

9686. Has it ever occurred to you that the medical service would be stimulated by the hope of some rewards similar to those called good-service pensions ? —I think it is only fair that a certain amount of good-conduct pay for meritorious service should be awarded to the medical service the same as to other officers in the army. If I were asked to say what were all the grievances of the medical department I would put them into a nutshell. I should say simply that they ought to be put on the same footing as other officers in the scientific branches of the army. Why should there be any distinction ?

9687. Would you like to carry that throughout everything ?—Yes. There are no doubt some points on which it would not be practicable.

9688. Would you put an assistant-surgeon on the pay of an ensign ?—You could not view in that light, and for this reason :—There is this distinction—that medical officers have nothing to look to but their pay, but combatant officers, when they attain a certain rank, have no end of appointments open to them. A combatant officer may have the command of a station, but a medical officer on half pay can get nothing.

9689. (*Sir H. K. Storks.*) Would it be desirable that they should purchase their commissions ?—I consider that the time at which they enter the service, and the expense of their education, are quite equivalent to the value of a commission. I have calculated that if I could have got into the service at a certain time, adding my pay and expenses, I could have purchased a majority—besides which, the purchase is only an investment. You can sell it again.

9690. You can sell your knowledge in private practice ?—A few might. It is very up-hill work, a work of time. By the time that you had succeeded you would no longer be fit, perhaps, to practise.

9691. (*President.*) You wish to see good service pensions introduced ?—I do.

9692. Could anything be given to stimulate study in the lower ranks, such as medals or scholarships, with a small payment, to be held for three, four, or five years, either for the best examination past, or the best case books ?—That question requires a little consideration. I think it would be advisable (though I am not prepared to say exactly what it ought to be), to hold out some such inducement. I think a well kept medical register, with clinical remarks to accompany it, is a very good test of a medical officer's knowledge when you cannot see him personally ; it gives you a good insight into his professional attainments, though I object to the registers as carried on in the manner that they are now, because a great proportion of them is literally a waste of time and money—they are not worth the price of the register.

9693. Why not ?—Because they are filled up with trivial cases, such as gonorrhœa, and those cases ought to be kept in a tabular form, and all the really interesting professional cases should be entered, and the inspector of hospitals would be a proper judge of that.

9694. (*Mr. J. R. Martin.*) You would confine the real registers to the record of acute disease ?— Yes, and the other in a tabular form—it is a mere waste of time. Still it is necessary to show in writing, that the medical officer has visited his patients every day.

9695. (*President.*) Do you propose any alteration in the roster for foreign service ?—I think it would give

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great satisfaction to the department, if there was a roster. It is one of the things that bears peculiarly heavily on the medical officers, the large proportion of foreign service they undergo. I believe it has been calculated that it exceeds every other branch of the service—it is generally 17 years and a fraction of foreign service out of 21.

9696. It is known to all officers when it will come to their turn, is it not?—I think that one can ascertain it by an application to the director-general.

9697. Did you ever serve at Chatham?—I was a probationer there some years ago; not latterly.

9698. Was not it the custom there that the roster was put up, showing the medical officers next in turn for foreign service?—Not when I was there. The officer next for foreign service was generally warned to hold himself in readiness, though I have known officers ordered to embark at 12 hours' notice.

9699. You have served in India?—Yes.

9700. Did you find that there was a sufficient number of Queen's officers, either staff or regimental officers, attached to the Queen's forces there?—I should say not. The number is sufficient, but there is generally such a large proportion away sick, that there is scarcely a regiment in which there are not Company's officers doing duty with it.

9701. (*Dr. A. Smith.*) The Queen's officers often become sick, and it is necessary to replace them with officers from the Company's service, are these easily obtainable?—Generally speaking, but they are very often of little use; they are sent there to learn their duty professionally. I do not consider that they are equal to the men that they replace; nine times out of ten the officer replaced may be a man of experience.

9702. (*Sir H. K. Storks.*) Are they equal to the assistant-surgeons who enter Her Majesty's service?—In point of professional attainments, certainly, but we get young men to replace them. I had one so inexperienced that he would not do anything without coming to me; he would not give even a dose of medicine.

9703. (*Mr. J. R. Martin.*) He was a probationer, was he not?—Yes.

9704. (*President.*) Do you get your fair share of appointments, do you think?—No; out of all the appointments that occur, I believe there are only three or four appointments which are open to officers in the Queen's army; there are one or two others which are not permanent, they are mere acting appointments, not equal to the charge of a native regiment.

9705. (*Dr. A. Smith.*) You do not mean a staff medical officer?—He is a regimental officer detached from his regiment for staff duty, which is objectionable.

9706. What duties do the superintending surgeons perform in reference to the Queen's hospitals in India?—They perform on the spot somewhat analogous duties to the inspector of hospitals, but, from their peculiar position, and a feeling of delicacy, they never interfered in any way excepting in the financial arrangements. I have only known one instance in which it took place, and that caused a great deal of annoyance and correspondence.

9707. (*Mr. T. Alexander.*) Do not you consider that a proper proportion of staff medical officers ought to be sent out to our own army in India?—Unquestionably it would give great satisfaction to the department generally; the troops prefer their own officers' services, and although they work very well together, still a man does not like an officer of another service to come and inspect him and look over him.

9708. (*Dr. A. Smith.*) At present there is no inquiry made into how the patients are cared for or treated in the hospitals of Her Majesty's regiments, except once a year, when the inspector-general goes round?—No.

9709. Do you consider that that is sufficient?—I do not.

9710. Do you consider that there ought to be some other authorities there that could, from time to time, inquire into how the hospitals were conducted, and whether the patients appeared to be carefully and satisfactorily treated?—It would be to the advantage of the service if it was so.

9711. (*Sir T. Phillips.*) What would you suggest?—I would suggest a certain proportion of staff surgeons of the first class, with analogous rank to that of superintending surgeon.

9712. To perform inspectorial duties?—Yes; when the inspector-general of hospitals goes away from a presidency there is no one there, and you miss him; there is generally a *locum tenens*, a young officer in the service, and I have known him to be a very young surgeon indeed.

9713. (*Dr. A. Smith.*) At the present moment, when it will be necessary to form large depôts to which the sick can be sent, what medical officers are likely to have the charge of those depôts?—There is no reserve to draw upon for that purpose. You must take regimental officers away to do that duty, or place Company's officers in charge, and you would have to take away the assistant-surgeons, who would hardly have had experience enough.

9714. Do you consider that an assistant-surgeon should be placed with 500 men, in charge of a large hospital?—I think that that appointment ought to be given to an officer of higher rank and greater experience than even a regimental surgeon.

9715. What rank of officer ought to hold such an appointment, when large accumulations of sick take place, it will not be possible to form small detached hospitals over India, during the present commotion, therefore large hospitals must be formed in the districts?—I think it ought to be a staff surgeon of the first class, with the rank of superintending surgeon.

9716. (*Sir T. Phillips.*) There are no staff surgeons sent to India?—Not any, that I know of; I am quite sure, when the army took the field, the inconvenience arising from the want of such officers must have been severely felt; they were then termed field surgeons; we had none; whereas the duty required to be done was done by the Queen's regiments. The principal part of the fighting always falls upon the Queen's regiments, and the principal part of the duty as to the wounded.

9717. (*Mr. J. R. Martin.*) You feel the want of inspectorial officers?—Yes, in the field, for the field hospitals, there were none in the late war in India.

9718. (*President.*) Have you any other suggestions to make, as to the dress or uniform of the medical department?—I think it is advisable that there should be no cause of complaint on that ground, and that there should be as little distinction as possible, consistent with the proper recognition of the officers. When a medical officer holds relative rank, I think that he ought to have a proper dress, to secure him proper respect.

9719. If he were a field officer, you would give him a brass scabbard?—I was told by an officer at Aldershott, the other day, that he was ordered to take it off. Anything that is calculated to lower, or degrade the department, by any absurdity in dress, is bad; it is not pleasant to be obliged to wear undress appointments in full dress, it excites remark; at present, the regulations are constituted so that a medical officer in full dress wears the same belt always as in undress.

9720. (*Mr. T. Alexander.*) That is changed for the higher ranks?—I am not aware of it; I observed that I thought this matter, on a fair representation, would in all probability be changed.

9721. You would recommend that it should go lower?—Yes, I think so; I think that their full-dress ought to assimilate to the others.

9722. As to the pouch and the sword?—Yes; a medical officer puts on an undress belt in full dress, which is not done in any other grade in the service.

9723. (*Mr. J. R. Martin.*) You would extend that to every grade of commissioned medical officers?—Yes.

9724. (*Mr. T. Alexander.*) Have military officers different swords and belts?—Yes, they have a distinction; they do not wear cross belts in undress, as they do in full dress.

9725. (*Sir. T. Phillips.*) Having regard to the long period that a man may be in the rank of assistant-surgeon, and surgeon, where you do not propose any selection, have you any suggestion to offer, for the encouragement of merit in those classes of the service?—I have no special proposition to offer; I think it advisable that there should be some encouragement if the seniority system is adopted, as it will remove a great deal of stimulus to exertion.

9726. (*Mr. T. Alexander.*) Would you not recommend that after 20 years all surgeons should rank as surgeon-majors with the rank of lieutenant-colonel?—Yes, certainly.

9727. (*Sir T. Phillips.*) Have you any suggestions to offer that in your judgment would develop merit and promote exertion?—I know nothing but brevet rank and honours.

9728. To be conferred for special service?—Yes.

9729. Suppose a case of special demerit, how would you deal with that?—If a man's case is not amenable to the articles of war I think he ought to be told at once that his promotion is in abeyance in consequence.

9730. (*Mr. T. Alexander.*) You would have brevet rank to carry pay?—Certainly; I think that where a medical officer is called upon to perform the duties of a position above him he should receive the pay. In the Company's service when a man is called upon to do the duties of a position above him he invariably receives the pay.

9731. (*Sir H. K. Storks.*) You receive the pay when you are acting in temporary local rank?—That is gazetted rank; I mean that if you are put in orders with the army to perform certain duties, you have the duties to perform, but you reap no advantage. During the whole time that I was in the Crimea, with the exception of a small portion, I was performing the duties of the rank above me upon the pay of the rank below.

9732. A combatant officer does not get increased pay?—He does in all important posts. A major gets command allowance.

9733. But not increased pay?—But he gets command allowance.

9734. (*Sir T. Phillips.*) What is the case when a lieutenant commands a company?—He gets the company allowance. With regard to courts of inquiry, I think they should be mixed, and that the medical element, if it is purely a medical matter, should predominate.

9735. Is there any other point that occurs to you?—With regard to a court of inquiry into the conduct of a medical officer as it at present stands, he is judged by men of another rank.

9736. (*Sir H. K. Storks.*) Supposing a medical officer to be brought to a court-martial, would you make the majority of the court medical officers?—Only a proportion of medical officers; they are generally tried for breach of discipline. I only know one instance in the service where it was otherwise, and that was in Dublin; it was purely a military court.

9737. (*Mr. T. Alexander.*) How should they sit, according to the dates of their commissions, their rank and position?—I think that a medical officer should take his position according to his rank; I believe at present he would be the junior officer, which is an indignity, to say the least of it. With regard to special appointments at home and abroad, I think they ought to be limited to a specific period. Staff appointments, both at home and abroad, say five years, with the exception of the director-general's office, where the special duties require special qualifications.

9738. Do you not think that those qualifications might be learned in a few months?—No; every man is not adapted to it. And besides, there is the *lex non scripta*, which is not very easily learned.

9739. (*Mr. J. R. Martin.*) Would it not be better to make it five years, subject to renewal?—Yes.

9740. (*President.*) There is nothing more difficult to learn there than there is in the office of the quarter-master-general or the adjutant-general?—From the little that I have seen, I should feel myself quite unfit for it.

9741. A new broom might be an advantage?—Yes. There is another subject, that of sick leave from foreign service; it is peculiarly hard upon medical officers at present. Why medical officers on their return home should not receive the same advantages as other officers, I cannot comprehend; but so it is. A medical officer comes home on sick leave, nominally for two years; but he finds that the moment he comes here it is cancelled, and the two years become six months, whereas the combatant officer walks about for two years whether he is well or not. With regard to ordinary leave, when the army returned from the Crimea an order was issued that all officers should receive three months leave, but the medical officer was told that he should have six weeks. Although he was in the Crimea the whole campaign, and he was a meritorious and deserving officer, his leave was cut down to six weeks, not from any disinclination on the part of anybody at the head of the department, but because it was said that the exigencies of the service required it.

9742. (*Sir H. K. Storks.*) What was the date of the special order issued, giving three months leave of absence?—It was a garrison order in Dublin, sanctioning applications for three months leave by all officers who had served in the Crimea.

9743. That would be a local order?—I do not know what it was. I know that the medical officer was told that he could only have six weeks.

9744. (*Mr. J. R. Martin.*) You think that that is of general application, and it forms one out of many disabilities?—Yes.

9745. (*Dr. A. Smith.*) Are you not aware that the medical establishment allowed for the army is not greater than is absolutely necessary; therefore almost all the medical officers are requested to be continuously at duty. Supposing you gave them that amount of leave, how would you supply the vacancies that would arise when medical officers had left?—I think that there ought to be a reserve for all contingencies.

9746. A larger establishment?—Yes. There is another case which I would mention, and I have less hesitation in doing so as it happened to myself. When a medical officer is on sick leave, and a vacancy occurs to which he is entitled, he finds that his promotion is stopped, but if a subaltern happens to be in a regiment and a vacancy takes place he finds himself in the next Gazette, and I cannot see why there should be any difference. I lost my health in the execution of my duty; I came home on sick leave to this country; I was then serving in the 4th King's Own Regiment, and shortly after my arrival (I was still sick, but better), I became the senior of my rank at home, and to my great astonishment I took up the Gazette, and I found that the next man to me had been promoted over me. I was annoyed and disgusted. I happened soon after to be at the station where the medical officer died; I got into the train and came off to London, and I saw the director general, and I ascertained that another man's name had gone in to him to be promoted, and he said that he could not help it: unless I was fit for duty he could not promote me. I said I should report myself as fit for duty. He said, "Very well; a medical board must decide that question;" and the medical board did decide that I was fit for duty at home but not abroad. Then that man's name was withdrawn and I got the promotion.

9747. (*Dr. A. Smith.*) Did a death vacancy occur in England?—Yes; and I got it ultimately, but only by remonstrance.

9748. Are you not aware that when you were home here on sick leave from India, you belonged to the Indian establishment?—No; my regiment came home at the same time as I did.

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9749. Are you aware now that the rule still exists that when a surgeon is on sick leave, if a promotion is to be made, that surgeon, though he may be the senior here, cannot get that promotion ?—I believe that is the case.

9750. But that the Minister-for-War has consented that the surgeon, whenever he becomes eligible, if it is 6 or 12 months afterwards, for promotion, when a vacancy arises shall have his commission antedated and stand before the man who got the promotion first ? —I have never seen any rule or order to that effect, though I know an instance in which that did happen.

9751. That being the rule, is there anything unfair in the government taking care to have efficient medical officers to fill situations immediately ?—I think that the officer ought not to lose his promotion ; he should be promoted still, although he remains sick.

9752. How otherwise is the government to supply medical officers for duty when they are immediately required ?—I think it is punishing an officer because he has the misfortune to be sick.

9753. (*Sir T. Phillips.*) Not if his commission is antedated ?—That is a different affair if he gets the pay.

9754. (*Dr. A. Smith.*) He does not get the pay, he gets the rank ?—I think that he ought to get the pay if he gets the rank.

The witness withdrew.

The Right Honourable Sir John M'Neill, G.C.B. examined.

Sir J. McNeill, G.C.B.

9755. (*President.*) You have seen the evidence before this commission or a large part of it, have you not ?—I have seen the greater part of it.

9756. You are the chairman to the board of supervision for the relief of the poor in Scotland, and in that capacity you have had the principal charge of a separate department ?—Yes.

9757. What is the number of medical men and officials placed under you in that department ?—The number of medical men I cannot state accurately from memory ; I suppose from 900 to 1,000.

9758. That is one for almost every parish ?—Yes, and in some parishes many. In a large town the parishes are divided into districts with a medical officer to each district.

9759. Has your attention been turned to the organization of the medical department of the army ?—To a certain extent it has.

9760. Have you formed any opinion as to the comparative advantage of directing that department by means of a board, or a single director-general on whom the whole responsibility should rest ?—Judging from my own experience I should say, that I should exceedingly regret to be without the assistance of my colleagues ; I rarely sit down to my own board that I do not receive from them very valuable suggestions.

9761. Will you explain how your board is organized?—The board consists of nine members, three of whom are commissioners named by the Queen, of whom I am one ; three are sheriffs of counties, named ex-officio. Whoever happens to be the sheriff of the county for the time becomes a member of the board. The Lord-Provosts of Edinburgh and Glasgow are are also ex-officio members; and the solicitor-general for Scotland is an ex-officio member.

9762. Do the ex-officio members attend with the same punctuality as the others ?—No, they do not ; they do attend specially, if their attention is directed to any particular subject, but the sheriffs attend very regularly. I receive the most assistance from them.

9763. Are the powers of all equal ?—Yes, except that as chairman of the board I have a casting vote in addition to my other vote. The usual number who attend at any board, except on particular occasions, is three or four besides myself.

9764. You find that the fact of having so many persons attending with you on the board does not diminish your efficiency, or diminish your responsibility, because, having the casting vote and exercising considerable influence upon them, you can carry any measure that you wish to see carried into effect ?—I cannot say that it does not divide the responsibility. I hold that the other members of the board are collectively responsible with me for what is done. At the same time, the deference which they are good enough to pay to my opinions, I being the paid member of the board, who devotes his whole time to the work, entitles me to say that I have been able, probably on almost every occasion, to carry in the board such propositions as I have had to make. But it has happened that I have considered it my duty to revise the propositions that I have made, and to consider the objections which were stated by my colleagues.

9765. Which had not occurred to yourself ?—No.

9766. (*Sir T. Phillips.*) Presented to you by the deliberations of the board?—Yes, by the deliberations of my colleagues, on a proposition that I had previously deliberated upon without perceiving those objections.

9767. (*Mr. J. R. Martin.*) Such were the advantages of bringing many minds to bear upon the subject ?—Yes.

9768. (*President.*) If you had to create a department for the government of the medical officers of the army, would you take a board in which, as in yours, each member had a vote ?—Certainly not. I think it of so much importance that the responsibility should rest with one person in the management of such a department as the army medical department,—that I should conceive the best constitution of a board for that department would be this, that there should be, besides the director-general, at least two colleagues associated with him, who should have the power of expressing their opinions in writing, and minuting whatever was brought before the board, but leave to the director-general the authority to act upon his own responsibility, disregarding those objections, if he considered it necessary.

9769. Supposing you had in the medical department some subdivision of labour, in order to enable all parts of the duties to be thoroughly performed ; that you had, for example, a statistical department, and a sanitary department within the medical board, the representatives of those two departments would be enabled to tender their advice to the director-general, and the director-general would accept it or not, as he thought best ?—Yes, exactly so. I would consider it necessary to serve the purposes which I would contemplate in having a board, that the various opinions should be minuted. I may mention that that is the constitution of the government in Madras, and also in Bombay. The Governor of Bombay has a council, and so has the Governor of Madras, and the Governor-General too. The propositions are made to the council, and the members of the council are entitled to express their opinions ; nay, they are enjoined to express their opinions, and minutes of those opinions are read in council, but it rests with the governor, after he has heard and seen those opinions, to decide for himself ; he decides with the knowledge of those opinions, and in disregard of them if he considers it for the advantage of the public service.

9770. Are you aware that the constitution of the Board of Ordnance very much resembled that ?—I was not aware of that fact, but it has appeared to me, from my observation of what occurred in India upon many occasions, and in this country, that such a constitution of a board has many advantages, and that, without dividing the responsibility, it ensures a fair discussion and consideration of every question, and a

record of all the objections which may be made to it by persons cognizant of the subject.

9771. (*Sir T. Phillips.*) Do not you regard that last reason as a very weighty one, the record of what has passed ?—I consider that essential.

9772. (*President.*) If the director-general at present, when he is doubtful upon any point, orders a board of three or more officers to consider the subject, and furnish him with their views, does not that attain the same object ?—No ; I think that every question ought to be brought before the board, but that the director-general should not be tied up by the opinion of his colleagues.

9773. You have found in the cases that you have mentioned that you derived much advantage from hearing a question ventilated by your colleagues ; if the practice had been for you not to meet in consultation, but to refer to them when you were in doubt, should you have altered their decisions ?—Very many of them I should not.

9774. You attach great importance to the results of the friction of intellect between two or three men ?—Yes.

9775. Would you propose that all matters should go before the board—matters of routine of every kind ?—That is a matter of detail. I should say that all questions of considerable importance, all questions that can be regarded as affecting the welfare of the service, ought to be brought before the board ; every change ought to be brought before the board.

9776. The detail of every department and sub-department within the medical department would be dealt with by the chief of the department ?—Yes, you cannot overload the board with such details.

9777. (*Sir H. K. Storks.*) Is it essential that the director-general of the army medical department should be a medical officer ?—I do not know that I should say that it is essential, I think it is desirable. I think that the service have too few prizes to deprive them of it.

9778. (*Mr. J. R. Martin.*) The board that you contemplate would supply a scientific council, and constitute a proper division of scientific labour ?—It would not only answer that purpose, but it would answer the purpose of recording the grounds of decisions upon every point of importance, and that I think is one of the essential conditions.

9779. Constituting a permanent record of the proceedings ?—Yes.

9780. (*Dr. A. Smith.*) Suppose 300 questions are submitted to the director-general and the board in one day; if he were to discuss each of those questions with the board, he would perhaps not conclude more than 15, and the others would be thrown over till the next day, when 300 more arrived, how would you provide for dealing with them ?—I suppose the board that I belong to has as many questions put to it as any board, but those questions must be divided into classes. A vast number of questions come, the answering of which is a mere matter of routine. Others involve matters affecting the whole system of administration, and it would be the duty of an intelligent secretary to bring to the notice of the head of the department those questions which appear to him to be such as ought to go before the board and leave him to determine whether they are to come before the board or not. But in all questions of considerable importance I cannot imagine any man at the head of a board not desiring to have his own opinions discussed by persons competent to do so.

9781. With reference to the secretary, and the cases which he did not consider it necessary to bring before the board, who should decide those cases ?—If they are questions of routine which have been previously decided,—if they are questions which have been put many times, and many times decided,—a precedent is established on which these would be decided also. If they are not questions that have been previously decided, and if they involve anything of principle in them I would have them brought before the board.

9782. Perhaps you are not aware that when there was a board of medical officers at the head of the medical department and a secretary, the secretary gradually began to withdraw everything from the board ?—That was the fault of the head of the board. I would not permit that.

9783. If it is necessary to bring before a board all matters of importance, reduce them if you please from 300 to 100, that will necessitate, will it not, each member of that board reading long documents with reference to the question ?—The course I pursue is this,—we meet once a week, and we dispose at each meeting of 100 questions or more ; but in the interval papers come in and they are generally sent round to the members of the board, who habitually attend, that they may see them before they meet the board. It is my business to examine them and to be prepared to state the case to the board and to suggest some course to be pursued. I consider that my duty. It is then for the board to determine whether that course meets their approbation or not, or whether they have any suggestion to make for its amendment, or whether they object to it altogether.

9784. (*Mr. J. R. Martin.*) But matters of every-day routine you would leave to be disposed of as the habitual business of the board ?—Matters of routine are disposed of by the secretary and myself in the course of the week, for I give daily regular attendance, and only those questions which it appears to me ought to come before the board are sent down to the board ; those questions invariably include every one about which I have any doubt, and if I doubt whether it ought to go before the board it goes before the board.

9785. (*Dr. A. Smith.*) There is this case, the Commander-in-Chief or the Minister of State for War may send for the director-general to consult him as to certain things—a long consultation takes place and long explanations are entered into ; he is then required to return to his office and give in writing his opinion ; in that case it would be necessary, if the board was to decide, that the whole of the matter should be officially laid before the board coming from the Commander-in-Chief, if it should be he who required an opinion, or from the Minister at War ?—I can hardly think that necessary. I am under the orders of the Secretary of State for the Home Department ; I have occasion to come to London and communicate with him about my business, and I return to my board and I give to them in detail a verbal account of what has passed or in writing sometimes, making it more easily intelligible by my verbal explanation.

9786. Upon that the board acts ?—Yes, I am always prepared (I consider my duty to be so) to suggest a course to the board on every question, and it is for the board to accept or reject my proposition.

9787. (*President.*) Your own board is not the kind of board that you would propose for the director-general ?—Not at all ; I have no authority except that of the casting vote. In a board for the army medical department I would think it my duty, if I were in the place of the director-general, to communicate to the board everything that I was not bound to consider confidential.

9788. In the case of the Board of Admiralty in England, the First Lord of the Admiralty is supreme, and he can insist upon any two lords signing an order, and if they refuse to sign it he can dismiss them. The secretary allots the business throughout all the different members of the admiralty, and he settles that which is mere routine, and he reserves for the First Lord anything of a confidential nature; the First Lord communicates with the government as to the steps to be taken by the government, and he either does or does not communicate to his board afterwards as he sees fit ; that is more in the nature of the board that you would recommend ? — Undoubtedly it is, but one of the objects that I would contemplate, one of the objects that I should desire would be to have my own opinions, in so far

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as it was possible, in so far as official confidence would permit, constantly discussed or examined, at least, by men who were competent to examine them.

9789. (*Mr. J. R. Martin.*) The average of the questions being scientific questions?—All questions involving principle or important considerations.

9790. (*Mr. T. Alexander.*) Were the regulations clearly defined and published for the guidance of medical officers, it would simplify matters greatly?—No doubt; but define as you will, and issue rules as you will, the head of the department, as I know from experience, having done the best I could to define, will always have a great number of questions put to him the answer to which is very often merely a reference to rules which had been overlooked and disregarded.

9791. As to your board you have rules and regulations laid down, have you not?—Yes, as stringent as we can make them.

9792. (*President.*) In self defence you have them?—I hold it to be the duty of men in one position to establish rules which shall be binding upon the board as well as upon those who obey its rules. I think that we are bound, where we have responsible servants, responsible to the public and to us, to let them know by what standard they are to be judged, if the rules are defective it is our fault, but if they fail to observe them it is their fault.

9793. (*Sir T. Phillips.*) As to the selection of a council, I do not understand you to mean a council nominated by the director-general, but a council nominated by the Minister of War?—Yes; I should presume that the government, if it resolved on such a constitution as I have suggested, would select the best men they could find to perform the duties required of them.

9794. (*President.*) What is your opinion upon the subject of promotion, as regards the comparative merits of promotion by seniority or promotion by selection?—I think that my observation would lead me to say at once, as a primary proposition, that a pure seniority of service will not do; if you carry seniority all through I do not think it will answer.

9795. (*Mr. J. R. Martin.*) Not in any scientific profession?—I do not think it will answer.

9796. (*President.*) The stagnation would be so great?—Yes; and the highest officers in your department would necessarily be past their work before they arrived at the rank.

9797. That is the system in the Indian medical rank, is it not?—It was when I knew it.

9798. Did it work ill?—It worked ill as regarded the senior portion; it worked ill as regards the constitution of the medical board; and it very often worked ill as to the superintending surgeons, who correspond to your inspectors. At the same time I must explain that it was not a seniority service as regards the advantages of the service, but only as regards promotion. The prizes in the Indian service are so numerous at civil stations and otherwise, which are given by selection, that it very often happens that promotion comes to an assistant surgeon when he would be very glad to let it go by; the rank becomes comparatively unimportant.

9799. (*Mr. J. R. Martin.*) The evils of the seniority system were not felt in the regimental classes?—It was not in those that it was felt, it was in the higher ranks that it was felt; it was where age, which is necessarily implied in seniority, disabled many men who were discharging most important functions.

9800. (*President.*) In those upper ranks, take the medical board, were they the three senior surgeons?—Yes.

9801. In consequence of these being taken by seniority and not by selection, did they lose that weight with the army, who found that they were not the ablest men?—Most undoubtedly.

9802. (*Mr. J. R. Martin.*) It never could happen that they should be the three ablest men?—I apprehend that there was sometimes one able man among them, who gave a tone to the whole, but it often happened that there was not one able man among them.

9803. The government, feeling that to be the case, always took care to appoint an able man as the secretary?—I suppose they did; at all events it was very important that they should.

9804. (*President.*) You would admit a certain amount of seniority in the lower ranks?—I think so.

9805. But selection for all responsible ranks?—I think so. I do not object to promotion by seniority, up to a certain point, but when you come to administrative officers, you must select.

9806. When it is done by seniority, should you say that it should be a rule not to be broken, except in case of distinguished service in the field, so that every man should know exactly where he stood, and what his prospect of promotion was?—I should hardly be disposed to limit it to distinguished service in the field. I think that the services of a medical officer ought to be considered on occasions, sometimes when he is not in the field.

9807. (*Mr. J. R. Martin.*) For high scientific distinction?—Yes, I would use the general term "For distinguished services upon particular occasions."

9808. (*President.*) You may say, that in the medical profession the distinction between peace and war does not exist, as it does among combatant officers?—Not to the same extent.

9809. A medical officer may be exposed to as much danger and responsibility almost in peace as in war?—To a certain degree, undoubtedly.

9810. (*Sir T. Phillips.*) You do not intend that the reward shall be for general merit or for general service, but for distinguished service on particular occasions?—If you are to take a man, so far as your seniority promotions are to be carried, out of his course, then I think you must show some distinguished particular services to justify that proceeding.

9811. (*President.*) Would you strengthen that by exacting that the reasons should be given in the recommendation to the Commander-in-Chief?—If what is suggested about a board took place, it would be a matter taken notice of at the board and minuted there.

9812. In speaking of seniority, you mean seniority in the rank, not too much complicated by sub-divisions, so that men should know really what their prospects by seniority were?—I am not sufficiently conversant with the subject to go into details.

9813. Have you read the evidence as to confidential reports?—Yes, I have.

9814. Have you formed any opinion on the subject? Yes, I have; and I could not help comparing it with the course that I have myself pursued in my own department. The course that I have invariably pursued is this:—I receive continually every week complaints and objections from members of parochial boards and others of the conduct of the medical officers, and the inspectors, and the various officers employed under the Board. The course I invariably pursue is this, a copy of the letter is sent to the man complained of before it is brought for consideration before the board. It is never so brought before the board until the answer of the man complained against can be put before it along with the complaint; that is the invariable course. There is another class of cases in which we do not pursue precisely the same course. For instance, a pauper complains of the treatment that he has received from the inspector or the medical officer; we do not then give up the name of the pauper who is subject to the authority of this man, but state the subject of the complaint and call upon the officer for his explanation; we invariably give up the name of a superior.

9815. Do you think, looking at human nature, which is the same everywhere, that that is the only course which can give satisfaction to those who are affected?—It is the only course that I would consent to adopt.

9816. (*Sir J. Clark.*) On sending the letter of complaint to the person complained of, and if he can

reply satisfactorily to that letter, you do not call him before the board?—We never call him before our board at all; if he does not give a satisfactory explanation, we send a commissioner or officer to investigate the case on the spot, and on his report we dismiss him, or retain him.

9817. (*President.*) Have you had oeeasion to give particular attention to the sanitary arrangements of large buildings?—I have had oeeasion to give particular attention to the sanitary arrangements of poor-houses: all the plans are sent to us for approval.

9818. A poor-house bears a fair analogy to a barrack?—Poor-houses vary very much in size, from aecommodation for 100 inmates to aeeommodation for 2,000 inmates.

9819. In those, have you any rules laid down with regard to the space to be allotted to each person?—Yes, we have; we have a minimum of space, which we never permit to be transgressed, whatever the pressure may be; but I must explain that the poor houses are almost never full, and that the poor-house ceases to be of mueh value as a test if it is full.

9820. You are generally enabled to scatter your pauper patients?—They have generally a mueh larger spaee than our minimum allowance, which is about 484 cubic feet.

9821. (*Sir T. Phillips.*) Is that for living or sleeping, or both?—No; 484 cubic feet is the space in the dormitories, but the persons who sleep in a dormitory are never in it during the day, if they are able to be moved.

9822. In the day it gets thoroughly purified?—Yes; the windows are opened and the bed-clothes are all thrown baek, so that the whole atmosphere of the plaee is completely renewed before they return to it, They are in the day-rooms, in the workshops, in the yards, and they are not permitted to enter the dormitory during the day.

9823. Have you recourse to any speeial means of ventilation?—Our parochial boards have tried various means of ventilation..

9824. Have you eome to any conclusion as to what is best?—I have come to a very distinct eonclusion that you must trust to the windows, and to perforations for ventilation. In a poor-house it is very diffieult to keep the ventilation open; you must put it beyond the reaeh of the inmates, who are always ready to stop up the openings if you will let them.

9825. (*Mr J. R. Martin.*) Natural ventilation being the most praeticable?—Yes; the shafts have failed.

9826. (*President.*) Is there any different minimum for the hospital wards?—Yes; I eannot exactly tell you the spaee, but I should think it is at least double that in a dormitory.

9827. (*Sir T. Phillips.*) Do you make any difference as to the minimum spaee in large towns in the eountry at all?—I do not think we have. In large towns we have to deal with a very inferior class of poor-house, which existed before the board existed, and we make the best we can of them.

9828. (*President.*) Praetically, without taking into eonsideration that very often the wards are not above two parts full in many workhouses, is the minimum exeeeded per bed. Do you give a larger space?—We do not interfere to give a larger spaee; we permit no pressure of numbers to be put in which would reduce the space; but practically I suppose that there has rarely yet been a poor house in Seotland which was so full as to reduce the space to that minimum.

9829. Do you ever earry it upon a higher calculation than that minimum?—I do not think we ever have done so.

9830. (*Sir T. Phillips.*) Do you know the arrangements in Ireland?—Yes, but there are few people to go into them now. You may give a ward to each patient, almost.

9831. (*President.*) I suppose you find a very eonsiderable improvement in regard to ventilation and sanitary arrangements in the later workhouses over the first?—If I were to lay before the Commissioners our poor-house plans, from before the time that we began in 1845 till now, you could almost arrange them, I believe, chronologically from looking at them; they have improved from year to year.

9832. Do you eonsider it important that sanitary knowledge should be employed in the most effective manner for the preservation and improvement of the health of the troops?—There ean be no differenee of opinion upon that, I think.

9833. You are aware of the enormous rates of mortality whieh exist among the troops, even at home?—I am aware of that.

9834. That it is as large almost as in any occupation known in this country?—I am not aware of any civil class in the country or any occupations in the country—any ordinary trades in which the mortality is so great as amongst the troops.

9835. In what manner do you consider that this improvement could be effeeted?—If you are to undertake the sanitary improvement, especially of the buildings in which the troops and the sick are lodged, you must do it by having recourse to the best sanitary advice that the country affords, wherever it is to be found.

9836. If the task was put upon you of immediately attempting to introduce those improvements in the existing barracks and hospitals belonging to the army, how would you set about it?—I would set about it by employing the best man the most knowing man in sanitary matters that I could get hold of, and I would send an engineer with him, and make him go round to every barrack and put it to rights.

9837. Would you join with him the medical offieer and the barrack-master at the station?—Undoubtedly.

9838. And form them into a committee?—Yes; I think that there is no time to be lost; I think it is rather too much that our soldiers should be worse lodged than our paupers.

9839. And our prisoners?—Of them I know less.

9840. Is there any way in whieh you would propose to provide for sanitary arrangements further than you have mentioned?—I think that that is the way to do it; give men power to earry out the objeet which you eontemplate and hold them responsible for doing it.

9841. You would make them an executive body?—Yes, within certain financial limits, without referenee, and to an unlimited extent with referenee and approbation; but it would be a great pity to send round such a body, and not to give them executive powers, within certain limits, at onee—let them do what they can at onee, and then the other things could afterwards be referred for eonsideration to the proper authorities.

9842. Would it be an advantage to have at some great general hospital, such as Fort Pitt, or such as Netley will be, for the study of the younger medical offieers, models of the different construetions of hospitals and barracks, and to attempt gradually to fix upon such a plan which shall be universally adopted?—I have no great faith in perfeetibility in that respect. I think that the advances of scienee are so rapid, you must always expect that the next generations will beat us; you eannot lay down a rule and say, that is the best.

9843. (*Mr. J. R. Martin.*) Not for permanence?—No; but take the best of them, that is of what we can produce now. I have no doubt that those barracks, which we consider so deficient, were considered very good buildings in their day, and the time will come when those buildings that we think very good now will be condemned.

9844. (*President.*) Your attention has been turned to the evidence that has been taken before the Commission upon the eondition of the barraeks and hospitals of this country?—Yes, it has.

9845. You would say, that they are very far behind the eivil hospitals, and the accommodation given to large bodies of men in civil life?—Most undoubtedly. I have just stated that our paupers are better lodged than our soldiers.

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9846. (*Sir T. Phillips.*) Do you construct workhouses on an uniform plan ?—Not at all—it would be hopeless. Each parochial board sends a plan for our approval.

9847. They are arranged with regard to special exigencies. ?—Yes ; they employ their own architect, and we take care that the architect does not mislead them into a wrong course.

9848. That he does not sin against what you regard as important for health ?—Exactly so.

9849. (*President.*) Have you directed your attention to the questions of diet, especially of the soldier ? —Yes, I have had occasion to direct my attention to the diet of our workhouses, and also in the Crimea I directed my special attention to the diet of the soldier.

9850. You laid down proposals for an improved ration for the soldier on field service ?—I attempted to do so, but I was diffident of my own capacity. I therefore submitted the ration which I proposed in conjunction with my colleague, to the highest authority on that subject with which I was acquainted, Dr. Christison, of Edinburgh, and in the appendix to our report is a communication addressed to me by Dr. Christison upon that ration which we have suggested. It embodies exactly my own views, that is to say, I entirely concur in what Dr. Christison has said upon the subject, and with the permission of the Commissioners I will read extracts from Dr. Christison's statement, which will exhaust what I have to say upon the subject. After stating the proportions of food which are necessary to the health and sustenance of a man, Dr. Christison says, "If the above proportion between the two sets "be maintained, the weight of real nutriment per "day varies, for adults at an active age, between "seventeen and thirty-six ounces ; the former being "enough for prisoners confined for short terms, the "latter being required for keeping up the athletic "constitution, or that which is capable of great "continuous muscular efforts, as in prize running, and "other similar feats. Dietaries ought never to be "estimated by the rough weight of their constituents, "without distinct reference to the real nutriment in "these, as determined by physiological and chemical "inquiry. Keeping these principles in view, and "with the help of a simple table, it is not difficult "to fix the dietary advisable for any body of men, "according to their occupation. It is also in general "easy to detect the source of error in unsuccessful "dietaries. For example ; any scientific person "conversant with the present subject could have "foretold, as a certain consequence sooner or later, "of their dietary, that the British troops would fall "into the calamitous state of health which befel "them last winter in the Crimea. Soldiers in the "field will be more efficient the nearer they are "brought to the athletic constitution. But as the "demand for protracted unusual exertion occurs "only at intervals, the highly nutritive athletic "dietary is not absolutely necessary. On the whole, "from experience in the case of other bodies of "men somewhat similarly circumstanced, 28 ounces "of real nutriment, of which seven are nitrogenous "or reparative, will probably prove the most suitable. "Any material reduction below 28 ounces will "certainly not answer ; and under unusual exertion, "kept up for days continuously, as in forced marches, "or forced siege labour, the quantity should for the "time be greater if possible." Then he goes on to observe, upon the two scales which we had given, one for the garrison, and one for the field,—"In "both of these scales, the proportion of the two "sets of principles is nearly as three to one. In "both, the total quantity falls a little short of what "appears the most advisable." So that the ration we proposed in his estimation fell a little short.

9851. (*Mr. J. R. Martin.*) Though it was in excess of the standard ration of the army ?—It was pretty nearly the ration of the army at the time when we left the Crimea. "In all other respects the dietary "seems unexceptionably good. It cannot be said "that the deficiency will certainly occasion ill health ; "but there is too little to keep up the strength and "energy of the men in circumstances of unusual "exertion. The following is an apt illustration." I think it is important to read this to the Commission as it is an illustration of the effect of a deficiency of abundant diet practically illustrated in a way that puts the question in my opinion entirely at rest. "Some years ago when I was appointed to inquire "into certain points relative to the management of "the prison, there were several men employed at the "pumps for raising water daily from the Tay for prison "use ; an occupation requiring much expenditure of "muscular strength. These men were without excep-"tion compelled to desist when fed on 25 ounces a "day. An addition of eight ounces of meat and six "ounces of bread was found necessary, and then they "all worked vigorously and cheerfully."

9852. So that the great desideratum is to ascertain the labour value of the dietary ?—Yes, where labour has to be done ; but a man in idleness must have a diet too.

9853. (*Mr. T. Alexander.*) You are an advocate for the ration to be clearly laid down and in sufficient quantity to keep the troops healthy under all circumstances ?—I am clearly of opinion that the efficiency of the soldier, which is much dependent upon his health, ought not to be left to the mercy of his own discretion. I think the true course is that the government should supply in all circumstances and in all places that which is necessary for the healthful sustenance of the soldier, and that the quantity and quality and description of the food should be varied according to the circumstances so as to maintain his health.

9854. (*President.*) You would make under that definition a difference between his ration in peace and in war ?—Yes, between his ration when he was doing little and much work.

9855. (*Mr. T. Alexander.*) Under no circumstances would you leave it necessary for the soldier to buy any article of diet whatever ?—I would give the soldier such a dietary as would make that unnecessary.

9856. (*Mr. J. R. Martin.*) That arrangement should be for peace as well as for war ?—In all situations and circumstances.

9857. (*President.*) There being varieties in the amount of the ration would depend first upon the climate, and the material of the ration where he was placed, and secondly upon the amount of work that he was required to perform ?—Yes, undoubtedly ; but taking care when you do change an article of diet, that you supply a nutritive equivalent.

9858. In that way you would, by consolidating all the stoppages, get rid of an immense deal of confusion and difficulty in the accounts ?—I directed my attention to that specially in the Crimea. I was instructed to inquire into the mode of keeping the commissariat accounts, and the confusion which I found arising out of the multiplicity of stoppages, the amount of labour in writing which it involved was something perfectly monstrous. I desired the commissariat officer who was in charge of that department to bring me the vouchers for one regiment, and he brought me the vouchers for one regiment, a very numerous one certainly,—the artillery,—which consisted of 348 half sheets of foolscap. I asked him for how long it was, and found that it was for one month, and to be repeated every month. I asked him what length of time it took him to make them out. and he said, "if I work hard, I can do it in 8 or 10 days."

9859. (*Mr. J. R. Martin.*) Under such circumstances an accurate audit of accounts becomes quite impossible ?—In the circumstances in which the army were placed in the Crimea, an accurate audit of accounts was obviously impracticable. What is necessary for an accurate audit of accounts, according to the present system of varying stoppages, is this :—Before you can settle the soldier's account you must determine how many days he has been doing duty on shore, how many days he has been in hospital, and how many days he has been on board ship receiving

spirits, and how many days he has not been receiving spirits, and so on. It is utterly impracticable to ascertain all those things.

9860. (*President.*) The practical result was, that it became necessary to disregard the regulations, and to make an equitable adjustment of the accounts of the soldier ?—It became absolutely necessary at the War Department to cut the knot. It was impossible to extricate it.

9861. If you had a uniform stoppage, and the same amount of stoppage abroad and at home, would you extend that also to the hospitals ?—I would.

9862. You would have no increased stoppage in peace for men in hospital ?—No, I would not.

9863. Might not that lead to malingering ?—I have heard of a great deal of malingering, and no doubt it does occur; but if you consider the poor house a sufficient test of destitution, and sufficient to drive an idle fellow to work against his will, while his material comforts and diet are better provided for in the workhouse, I do not see why you should not drive malingerers out of an hospital upon the same principle.

9864. You think practically that you drive out the malingerers from the workhouse ?—I do.

9865. You think there is not malingering to any extent ?—I think that there was a good deal of malingering during the peninsular war.

9866. I mean in workhouses ?—There are very few people, two or three people, perhaps, in a workhouse, who resolutely remain there ; those are idiosyncracies which you cannot very well deal with ; but you do not legislate or regulate for the exception but for the rule.

9867. (*Mr. A. S. Stafford.*) You said that there was a good deal of malingering during the last war ?—Yes ; and if you look at the mode in which your army was recruited during the last war, I do not think that you need wonder at it, you had all the very worst characters in the country in your army, you recruited from a class of men who are very rare in the army now.

9868. You do not think that the abolition of the stoppage would lead to a bad soldier going into hospital to accumulate a balance of money ?—No ; I think if the man at the head of the hospital knows his work that cannot be carried to a great extent, but if he does not, it may.

9869. (*Sir T. Phillips.*) By the last war do you mean the war in the Crimea ?—No ; I believe there was very little malingering in the war in the Crimea, a little there may have been.

9870. (*President.*) Is it not just as between the soldier and the public, that when the soldier is not giving the service for which he is engaged, you should not give him the same amount of pay, and the more so as the public is charged with his cure, and is put to considerable expense ?—If the sickness is his own fault that may be fair, but if he has incurred his sickness in serving you, are you to punish him for it ?

9871. In war you have no hospital stoppage ?—If a man catches cold at night at home on sentry, and goes to the hospital, are you to punish him for that?

9872. Could you establish two rates, and say to one man you come in gratis, the public will treat you as you got your illness on sentry ; and to another man, you are ill truly, but that is your own fault ?—I would not draw any distinctions. I think that the soldiers do their work in a way that entitles them to that indulgence. You are not to punish a man who has incurred his illness on duty, in order to catch a man who has incurred his illness by his own fault.

9873. (*Sir T. Phillips.*) A large proportion of cases, you are aware, occur from the dissipation of soldiers ?—Yes, but do you imagine that by hospital stoppages you will put a stop to it ?

9874. (*Mr. J. R. Martin.*) You only diminish the poor fellow's powers of indulging in his vices if he have any ?—I do not think that you can do that ; you drive him to lower vices at a cheaper price.

9875. (*President.*) You would maintain the consolidated stoppage of 8*d.* upon a man in hospital ?—I say that one of the great objects is to get rid of the different stoppages, and that there should be a net pay, so that every soldier's account could be settled by the number of days.

9876. (*Sir T. Phillips.*) You know with regard to a labourer or a mechanic, that he is not supported during any illness with which he is afflicted ?—No, neither does he get rations ; you do not undertake his support, but you do undertake the support of the soldier, and you are bound to support him whether he is sick or well.

9877. (*President.*) Are you of opinion that it would be advantageous where you have large bodies of troops together, say in Dublin at home, or abroad at such a place as Malta or Gibraltar, to have general hospitals instead of the present system of regimental hospitals, under one roof, with a view to give the medical officers practice in conducting hospitals on a large scale ?—I do think that it would be a very important improvement. I think that we cannot look at the experience of the last war without regretting that our medical officers had not had an opportunity of making themselves acquainted with the organization of military hospitals on a large scale. I think it is exceedingly desirable that the opportunity should be afforded them, and I have not the least doubt that they would make a good use of it.

9878. It is often said that the present system of regimental hospitals works admirably well, and that after all a general hospital is only a regimental hospital multiplied by so many figures, therefore there is no difference in practice, and therefore the man who can do the one necessarily can do the other ?—We have practical proof that it is not so.

9879. (*Mr. J. R. Martin.*) Have not general hospitals usually been limited to the circumstances of war, and have they not always been found to be so great an evil that they have invariably ceased with the war itself ?—I think that you are so wedded to the regimental system that you return to it as soon as circumstances permit.

9880. (*President.*) Is there not a disadvantage in removing soldiers from under the care of the medical men belonging to the regiment who are acquainted with all the circumstances, their disease and their constitution ?—He may be in certain cases acquainted with them, it is possible, but what happens to every man who goes into a civil hospital ? He goes under the charge of a medical man who has never seen him before.

9881. (*Mr. J. R. Martin.*) Practically has it not been found in general hospitals that the removal of a soldier from the supervision of the surgeon and his colonel or captain, and from the tending he received from his comrades has very much demoralized the man ?—I have no experience of any such results. I should on the contrary very much doubt the advantage of having many comrades together in a situation of that kind ; they are apt to club.

9882. (*President.*) Discipline is easier when the regimental tie is broken up ?—Yes ; besides that you have a multiplicity of officers.

9883. (*Mr. J. R. Martin.*) In the peninsular war the great hospitals at Coimbra and Abrantes were found to accumulate immense evils, both physical and moral, and were found to breed new diseases, and to render the cure of the old a matter of great difficulty ?—Yes; but I am afraid they were very bad hospitals.

9884. And also in the time of George the Second ?—Yes ; I think we have mismanaged our general hospitals very much. If you look at the hospitals that we erected in this country at the time when those campaigns that you speak of were going on, can you wonder that the temporary general hospitals there produced such results, that is if our hospitals at home were so bad, our temporary hospitals must have been a great deal worse.

9885. Referring to all the experiences of the British army, would it not be a wise course on any

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occasion of a foreign expedition to send home men as rapidly as possible?—That would depend on the distance. You could not very well send them home from China.

9886. But in countries where the sea board formed the base of operations?—It is a question of distance quite.

9887. (*Sir T. Phillips.*) I believe you recollect that the Duke of Wellington made arrangements at the latter part of the peninsular war for sending his sick to England?—Yes.

9888. (*Mr. J. R. Martin.*) Having experienced the evils of the two great hospitals I have mentioned?—Yes.

9889. (*President.*) As was done also from Turkey?—Yes.

9890. Do you look upon it in this way, that a man may be a very good regimental officer, and he may be told,—you understand the command of your regiment, you know that a brigade consists of three such; you will only have to attend to that; a division consists of three brigades, you will only have to attend to that, and therefore you will be a perfect divisional officer if you understand correctly your duties in your regiment?—No man can hold such language, nor can it be used as to the medical department. A man may be perfect in his regimental hospital, but perfectly unfit to conduct a general hospital.

9891. He would be beaten by the scale of it?—Yes, if you accumulate regimental hospitals, you have as many surgeons as you have regiments there, then you have so many hospital serjeants, and you have the attendants each devoted to his own particular section of men, but you have no general organization, and no possibility of carrying out a general system; besides you have no means of carrying out a general system of instruction, which I should look upon as one of the advantages of having a general hospital. You can have no clinical instruction in a hospital divided into regiments; you have no one man in charge, and no one man who knows what is doing everywhere. But if you throw all your men together into one general hospital, and have the whole conducted on that principle, you may make it, as I believe, a very instructive medical school, which a regimental hospital cannot be.

9892. (*Sir T Phillips.*) As to civil hospitals, they have no such organization, each of the surgeons treats his own patients?—Each of the surgeons treats a certain number of patients.

9893. He treats them himself, and it is so with regard to all the officers of a civil hospital, however large it may be; there is no superior medical authority in the hospital, chargeable with the organization of the whole machinery?—No, but in the army, if you are to have a general hospital you must have such a man.

9894. He would be an administrative officer, rather?—Certainly.

9895. (*Dr. A. Smith.*) Are you aware that for some time past, we have been congregating regimental hospitals together, into the form of a general hospital, where every regimental surgeon treats separately his sick, but is superintended by a senior medical officer, not of a regiment, who dictates the general regulations for the whole of those regimental hospitals?—Does he dictate the treatment?

9896. No, but he goes through each of those regimental hospitals, looks at the treatment of each surgeon, and if he is not satisfied he probably suggests that another treatment should be adopted?—That approaches considerably nearer to the regulation of a general hospital, but in forming a general hospital there are many things to be considered, to give unity to the working of the whole; and you must be perfectly aware, that one of the difficulties of our medical officers, with all the zeal and anxiety that they had, was their want of experience in that form of organization, so that they had to acquire their knowledge.

9897. (*Mr. J. R. Martin.*) It was there that the deficiencies were the most marked?—Yes.

9898. (*President.*) You do not mean medically, but in all the appliances and the administration of the hospital?—Yes, the administration.

9899. (*Sir T. Phillips.*) You do not mean that the treatment of disease is to be taken out of the hands of the surgeon executing professional duties?—I do not think that that is a necessary result; I think it is very desirable that there should be intercommunication between all the officers attending the sick in a hospital, and that the senior medical officer should know what they are all doing—then the result I should expect is this, that the senior medical officer seeing those men at their patients' bed-sides would be a much better judge of what they were made of, than he could become in any other way.

9900. Is it not the case in civil hospitals that the varying treatment of different professional men is one of the means whereby the scientific knowledge and treatment of disease is improved?—Unquestionably, if you cut it all down to one uniform system you can have no improvement, of course.

9901. (*Dr. A. Smith.*) Would you not say that the difficulties which the medical officers had to contend with in the East, arose principally from the circumstance that we had been so many years at peace that they had had no opportunity of seeing a general hospital?—I hope we shall be a long time at peace again, but I should like them in peace to see a general hospital at work.

9902. Suppose they do go there and do duty in those general hospitals, unless their attention is directed specially to the general arrangements they will see or know nothing about them?—I confess I should consider it one of the advantages of having such a general hospital that it afforded you an opportunity of instructing your regimental medical officers in that very department; you would make it your business.

9903. We do that now?—You would make it your business to exercise the regimental medical officers in the management of a general hospital, and make them thoroughly acquainted with the whole details of its administration.

9904. We have only two general hospitals, one at Chatham, and a small one at Dublin, and to those hospitals every officer of the department has been once or oftener, with a view that they should see how general hospitals were conducted?—If we are to judge by what occurred in the last war that experience was not sufficient.

9905. (*Sir T. Phillips.*) A large general hospital would give the means of instruction, and also give the director-general the means of selecting suitable instruments?—I think it would be most valuable, as affording good grounds for selection.

9906. (*President.*) You think that a great number of officers would be brought under the supervision of one man, who could therefore better form an opinion which was the best?—They would be brought under a competitive examination and I think that the senior medical officer in charge of such a hospital, having those men practising for some months under his charge, ought to be able to place them as you would horses after a race.

9907. (*Sir T. Phillips.*) Supposing you found at the head of that general hospital, a man peculiarly qualified for an organization, he would be the person probably to be selected in a case of difficulty and emergency?—I do not go further.

9908. (*Mr. T. Alexander.*) Are you aware that the French medical officers are anxious to have the regimental hospital system introduced into their service?—I think it is very probable; it may be desirable for the French when they have regiments detached to have regimental hospitals, which is the system in our army in peace. I do not see what other system would have answered as well; but the question is, whether, while you retain your valuable regimental system you are not also to instruct medical men in the general system.

9909. (*Mr. J. R. Martin.*) You think that we have devoted ourselves too exclusively to the regimental system?—I think that the regimental system is a good system, but a system that breaks down on certain emergencies.

9910. (*Mr. A. S. Stafford.*) You do not go to the entire abolition of regimental hospitals?—No; I say when you happen to have regiments collected, assume that you have your regimental hospitals under one roof, or where there are the means of doing so, instead of preserving there your exclusive regimental organization, you should have a general organization for the whole, which would be a model for all those men in the event of their being called upon to establish a general hospital at the place of operations, and to give clinical instruction also. I hold that in such a situation the senior medical officer would be able to give most valuable instruction without exciting the jealousies of the younger men about him.

9911. (*Dr. A. Smith.*) Would not this meet your view. At Aldershott we are preparing a hospital for the sick of 10,000 men, and we have adopted the Bordeaux plan of blocks. Each regimental hospital has a block, and they are altogether connected by one corridor. The cook-house is the cook-house for the entire of the regimental hospitals. The surgery is the pharmacy for the entire hospital; those patients being in a regimental hospital are like a series of wards of a general hospital, and the regimental medical officers attending them are like the medical officers of a general hospital. There is the principal medical officer, and a staff surgeon of the second-class for the superintendence and management of this hospital, so that it becomes very nearly the same as you suggest?—It approximates as nearly, perhaps, as the tenacious predilection for the regimental hospital will permit.

9912. (*President.*) You have had occasion to see a good deal of military camps in your life?—Yes; I have spent some 10 or 15 years under canvas.

9913. You have had occasion to see something of military hospitals?—Yes; I have had occasion to see something of the military hospitals of the European troops in India, and a good deal of the Russian hospitals, and something of the French military and civil hospitals.

9914. What would you consider to be the best organization for a general hospital, if we should have again the necessity of creating large general hospitals at the base of operations?—That is a question which I considered with all the care that I could give to it. I was brought into contact with the circumstances. I set out with the principle that a general hospital at the base of operations ought to be sufficient for itself.

9915. Independently of other departments, do you mean?—That it should contain within itself the means of supplying all its wants, and to arrive at that result I think it would be absolutely necessary to have some supreme authority in the hospital, who should command everybody who entered it, who should have powers commensurate with the wants of the hospital, and a responsibility commensurate with those powers. I would have at the base of operations a governor specially appointed for the hospital.

9916. And for nothing else?—Yes.

9917. Not like a commandant?—Not at all. I would separate the depôt from the hospitals altogether. I would make him supreme in the hospital—as supreme as the captain of a frigate is on board his ship. I would permit him to do whatever he conscientiously believed was necessary for the welfare of the hospital. He should be the person to expend money, and no money should be paid without his permission; he would order repairs, and he would order supplies; but, as I suggested in respect to the medical board here, I would have with him a principal medical officer. I would have a person in charge of the attendants, and I would have a purveyor. Those men,—the purveyor, and the superior of attendants,—with the principal medical officer, should form a council with powers to make such suggestions and minutes as they thought proper, but leaving to the governor the absolute power of acting on his own responsibility. I would relieve the medical officer entirely of all administrative duties, everything connected with the cleansing and charge of the wards of the hospital. I conceive, having myself a strong sympathy with the profession, that their true dignity consists in restricting themselves to their professional duties. I cannot conceive that the dignity of a medical officer is augmented by directing the duty of a scavenger or a chambermaid; I would release him from everything of that sort. Everything should be done to his hand, and he should have the power to demand everything that was necessary.

9918. You would not allow to the governor the slightest right of interference with the medical treatment of the patients?—No. I would not allow that.

9919. You would not object to his being a medical officer?—No; but he should not exercise his profession in the hospital.

9920. Would you prefer a military or a medical officer?—On the whole I think I should prefer a military officer.

9921. You would require a man of some rank whom you could invest with great powers, and who would not be afraid to exercise them?—Yes, I would have a man picked for his qualifications.

9922. (*Sir T. Phillips.*) There would probably be less jealousy on the part of the medical men?—Yes.

9923. (*President.*) This is exclusively for a general hospital at the base of operations?—Yes, exclusively. If you were to provide what you have had in all your wars, a great general hospital at the base of operations, you require for it some organization different to what we have ever had before.

9924. You want to prevent three or four departments whose co-operation is necessary, from having no referee immediately above them, except the Secretary of State, who may be 1,000 miles away?—Yes. Give this man the whole power to do what he considers necessary to have the hospital in perfect order, and hold him responsible.

9925. (*Mr. J. R. Martin.*) Having placed him there you would regard him as the most important executive officer in the country?—I should hold him to be supreme within the limits of his command within the hospital, with power to expend what was necessary for the efficient treatment of the sick, and responsible for all the expenditure.

9926. You would regard him as the most important medical officer in the army?—In a certain sense he might be so regarded.

9927. And next to him the regimental-surgeon?—The principal medical officer in the hospital would be, in the medical department, the principal officer.

9928. (*President.*) Would not the duty of ordering everything be the duty of the purveyor?—Yes; but I think the purveyor ought not to have licence to order without the cognizance of the governor.

9929. Do you consider the scale is too large in a general hospital to be entrusted to the purveyor?—If we were engaged in war, suppose a hospital was to be established at the base of operations, which would probably be the port of disembarkation, or near it, the first step I would take would be to send the best sanitary man that I could get, and send with him an engineer, and I would set to work and select the buildings which were to constitute the hospital and put them in a proper condition as to drainage, sewerage, and ventilation, and everything that was practicable. If there were more buildings than one it should be done as to all; and, having done so, the Secretary of State should name the governor of that hospital, the principal medical officer who was to take charge of it, the purveyor and the superintendent of attendants, which I consider a very important officer, for the relief of the medical officer, and let the purveyor send in his lists with the cognizance of the governor, before he leaves this country, for all that is required for the supply of this hospital. Let the superintendent of the attendants do the same, and let

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the principal medical officer in communication with his apothecary do the same as to his supplies, and then before the men go into the hospital they will have everything in it they require.

9930. You mentioned, as one of the persons whom you would put in possession of considerable authority, the chief of the attendants?—Yes.

9931. You are aware that there is a hospital corps called the medical staff corps, do you mean that there should be some one of that body to be at the head of them and responsible for their conduct?—I do not know the constitution of that body sufficiently to determine whether they contain the elements necessary to make such a selection from, but I would place in charge of the attendants some one who could maintain discipline, to whom the medical officer should say that the attendant of such a bed had neglected his duty to day, and the superintendent of attendants should be responsible for the discipline of his own corps.

9932. Would you have a man with rank like that of quarter-master?—I would have a man of such rank as would enable him to maintain his authority.

9933. The hospital serjeant would not be a man of rank enough?—No.

9934. That is what you would do in the case of a general hospital at the seat of war; should the same organization, barring the governor, run through the hospitals at home?—I should think so.

9935. You would place more responsibility then upon the purveyor, who would become the commissariat store-keeper of the hospital?—Yes. I have not given the same attention to the organization of hospitals at home.

9936. Would you make any distinction as to the supply to the general hospital at the base of operations, and the field hospital in the front?—The field hospital in the front must be mainly supplied by the commissariat.

9937. (*Sir T. Phillips.*) With regard to the purveyor of the general hospital at the base of operations, should he be a commissariat officer?—I do not care whether he is or not, but he should purchase all that is necessary for the hospital.

9938. Is it likely to be as successful to have the purveying for the hospital cast upon a separate department, who should have to purchase corn, bread, and meat, as it would be to let that work be done through the commissariat, the obligation being on the commissariat?—I object to the obligation to supply the hospital being cast upon the commissariat. If you employ a commissariat officer you must detach him exclusively for the purposes of the hospital.

9939. (*Mr. J. R. Martin.*) Would you have a separate commissariat exclusively for the service of the hospital?—I am indifferent upon that subject.

9940. (*Sir T. Phillips.*) Supposing an army in the Crimea, and you wanted to supply cattle and corn, the commissariat would probably have to go to Asia Minor to sweep the markets, would you send the purveyor to buy corn and meat?—I would make the purveyor buy for himself and not have him rely entirely on the contracts of the commissariat, and for this reason that he buys different articles; he buys a better quality of meat, and he probably buys a better quality of bread. You want to give to your sick better things, and you allow a higher price.

9941. You would send him into the market to buy what he required, however distant the market might might be?—I do not think it would be necessary to go to distant markets.

9942. Would you supply him with vessels at his own command?—No; I do not know any case in which at the base of operations it would be necessary to go to a distance for cattle or for supplies of any kind; it is when you leave the base and advance from it that that might be necessary.

9943. Would you give him a waggon train?—I would give the governor the power of making requisitions upon the land transport corps for transport for the hospital, and if convenient let it be given; if not, I would give him power to hire land transport sufficient for hospital purposes on the spot.

9944. (*Mr. J. R. Martin.*) The advantage of the purveyor's department, I think, is, that owing to the limited sphere of his duties, he is able to rely upon and obtain better materials for his hospital than the average of the commissariat supplies?—Undoubtedly he is allowed to give a higher price, and he ought to get a better article. I see great inconvenience in the commissariat making contracts for cattle at different prices; the commissariat would have to buy for the hospitals at one price, and for the army at another; that would complicate the operations of the commissariat very much, whereas if the purveyor bought, it would be, I think, in the vicinity where the general hospital was, and it would happen that the purveyor would make contracts not only for the purchasing, but for the feeding of the cattle.

9945. You are aware that in India the commissariat of the hospital is a branch of the general commissariat? Yes, but I think the other is the better system.

9946. (*President.*) In the case of field hospitals and the medical department with the army in the front there ought to be a portion of horse transport permanently attached to them; you would not trust to requisition in cases where they were wanted?—Horses and mules would be daily required, but it would rest with the person in charge of the land transport corps, to determine whether they should be distributed daily or how it should be done: it is impossible to lay down a rule for that.

9947. If an army is spread over a wide line of country then it would be impossible to allot your horse transport by a daily requisition?—It would not be daily requisitions. There should be a certain number of mules for the carriage of a particular hospital, for the carriage of the sick, and for the hospital tents, and hospital stores, to put them on the ground on which you encamp. A question then arises—are they to remain with the regiment, or to go to the brigade park, or to the division park, or to the general park? That would depend upon the distribution of the army, and upon the discretion of the officer at the head of the land transport corps, but he would assign daily, say the next morning, the same number for the march, and send that number of animals to each regiment. There are many cases in which it would be much for the advantage of the service that the officer in charge of the land transport corps should have the power of accumulating those animals in divisions or in a great park, all under his own supervision, he would have his own people always with them; if you detach those persons belonging to the land transport corps to a distance from the officer who is their superintendent, they become demoralized, and not only lax, but they are tempted to be lax, and they are asked to do twenty things that they ought not to do. I would accumulate them under the charge of some responsible officer, either a brigade officer or a divisional officer, according to the circumstances.

9948. Would it ever be possible to relieve the commanding officer of the army of the charge of the general hospital at the base?—That would depend very much upon circumstances. For instance, if it had happened in the last war that the army instead of going to the Crimea had entered upon a campaign in Bulgaria, passing through Wallachia and Moldavia, and gone up into Bessarabia, I think that circumstances might have arisen in which it would have been far more convenient that the communication of the general hospital at Scutari should have been with home and not with the head quarters. I should contemplate their separation where a general officer thought it expedient that they should communicate with home rather than with him.

9949. Is not this likely to arise,—that the general officer commanding the army in the front has his whole attention fixed upon their health and their success, and he will always keep the best medical officers there, the men behind being to him compa-

ratively immaterial, and is there not a chance of the hospital at the base being neglected in favour of the army in the front?—Yes, naturally so; and for that reason I would have a responsible governor at the general hospital; I think that the hospital at the base without such a man is left in a hopeless condition; you must have a man whom you can trust.

9950. Who shall represent the Commander-in-Chief?—He should represent every authority.

9951. You stated, in speaking of boards, and of the governor of a hospital, that advice tendered to him by medical officers should be in writing, and be recorded with his reasons, if he rejected it?—Yes.

9952. Would you extend that principle to the medical officers, with regard to divisions and brigades; and upon the question of taking up sites for encampments, would you make it imperative on the medical officer to give his opinion, allowing the general officer to reject it if he thought fit?—I would make it imperative on the medical officer to tender his opinion; if you do not do that, it would probably be considered impertinent. If the medical officer, as a sanitary officer, tenders his opinion to the commanding officer, he has acquitted himself of his duty, but I would require him also to send to his own professional superior a copy of the report that he made to his commanding officer; that would come home to the medical department here, with the observations of the senior medical officer upon it; and that would enable them to assist the government in determining whether what was proposed by the medical officer was right or not.

9953. That would extend to all questions relating to the food and the hygiene of the troops?—All questions affecting the health of the troops.

9954. Would you appoint, in order to relieve the principal medical officer of the army of any additional duty over and above that which he has already weighing upon him, a separate sanitary officer, and attach him to the quartermaster-general's staff, or to the principal medical officer's staff?—Undoubtedly; I think it very important; I think it is of the greatest importance that you should have the best sanitary advice that can be obtained, for the quartermaster-general's department: for instance, in the selection of houses, and all that is in the quartermaster-general's department, the selection of ground for encampments, the disposition of troops in different buildings, the means of correcting existing defects in existing buildings, and all those sanitary questions. I do not see how, in the present condition of sanitary knowledge, you are to deprive the army of that advantage; I think it is unjust if you do.

9955. When you speak of a sanitary officer, in civil life sanitary study has become a speciality; hitherto that division of labour has not taken place in the army medical department, how would you propose to instruct army medical officers in those specialties, and, pending the time when you would have a large body of them available for service, how would you bridge over the interval?—There is only one way of bridging over the interval, and that is to take the best men you can get, wherever you can find them; that is only just to the soldier.

9956. You could not perpetually do that; you could not deprive the medical department of their prizes when once they are instructed; how would you instruct them?—You must get up a school, it does not exist, and it is properly the duty of the government to get up a school; if there were a school in civil life medical men connected with the army would take advantage of it, but there is none and you must establish a school.

9957. (*Mr. J. R. Martin.*) It is a matter now of special study to special persons?—Yes.

9958. (*President.*) You could do it at Netley, could you not?—Yes, undoubtedly.

9959. And you would make every officer go through a course of sanitary study?—Yes; and you must attach some value to proficiency in that course.

9960. You must reward it by making appointments?—Yes.

9961. (*Mr. J. R. Martin.*) An officer of health, as contemplated by the president, would be in fact the medical topographer of the army?—It would be his duty to represent any danger that would result from taking up any particular ground, and it would be for the military authorities to determine whether that danger ought to be encountered or not.

9962. (*Sir J. Clark.*) Every medical officer is an officer for hygiene, every medical officer ought to be acquainted with hygiene, and it would be merely for the head of the department to select those men who had paid more attention to that subject than others?—I do not pretend to offer an opinion as to the time that it would take a man to learn it. I believe, comparing the army medical officers with the great bulk of officers in civil life, the army medical officers are as well or better acquainted with hygiene than the great bulk of men in civil practice. At the same time I am bound to admit that I think there is a long interval between the knowledge possessed by the medical service of the army and the knowledge possessed by those gentlemen who have made it their special study.

9963. But it is the duty of every surgeon in the army to study hygiene?—Yes, I think it his duty to study it; I think that you are bound to afford him the means of studying it efficiently, and if you do that you will have among the army medical officers as distinguished sanitary officers as any country can produce.

9964. (*President.*) I think you hold the opinion with regard to attendants in hospitals and as to the selection of hospital serjeants that they should come from the ranks and not be a part of the medical staff corps?—Yes, I think that you should make the situation of hospital serjeant a prize to a good soldier.

9965. You would pay him as you would a quartermaster serjeant?—Yes. I would select the best man and make it worth his taking; you have no more important duty for a serjeant to perform.

9966. Would you remove him from all military control?—He should be the hospital serjeant, and he would be amenable to the medical officer for the time being. I would not preclude his future promotion; I do not think that your quartermaster-sergeant has more important duties or requiring higher intelligence than your hospital serjeant has.

9967. (*Sir T. Phillips.*) Is the pound of meat that you suggested in your report a pound of raw meat?—Yes.

9968. Your attention has probably been directed to the large amount of disease and mortality in the army as compared with that in civil life; has it been specially directed to the fact that the excess arises mainly in one class of diseases?—No.

9969. If you take the entire mortality in the Guards at 20·4, and the mortality in civil life in large cities at 11·9 you get an excess of 8·5. If you take one class of diseases, namely, pulmonary affections, you will find that in the army the deaths are 13·8, and in civil life 6·3, so that, of the entire excess of 8·5 you have 7·5 referable to one special class of diseases. Has your attention been directed to any explanation that can be given of the development of disease in that special direction?—No; but I am not surprised at the excess of mortality in the army.

9970. (*Mr. A. S. Stafford.*) Why are you not surprised at the excess of mortality?—When I find men crowded in barracks and hospitals in the way that they are, I cannot be surprised.

9971. You think that that is almost sufficient to account for it?—That, taken along with other causes, I look upon as almost a sufficient reason. If you took men in civil life and shut them up in a barrack in the same way, and kept them in their room all night, I have not the least doubt that you would have an increased rate of mortality.

9972. (*Mr. J. R. Martin.*) You regard defective ventilation as the great cause?—Yes. defective ventilation, because I do not think it is possible, packing men as close as you do, to give ventilation that would be satisfactory. I think you must give

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them more space. I think that greater space is necessary whatever be the amount of ventilation.

9973. (*Sir T. Phillips.*) Has your attention been directed to the fact that the mortality in the cavalry is not much in excess of that in civil life?—Yes. If you look at the space allowed to the cavalry it is about double what the infantry have.

9974. Do you regard the fact that the cavalry soldier has more employment as a conservative element in his case?—I think that the cavalry soldier having exercise for his arms and the upper part of his body, may to a certain extent tell; the infantry soldier has his hands pinned down the greater part of the time he is on parade, and he has very little use of his arms. I think that is a disadvantage to him.

9975. Do you think that the circumstance, that until lately the height of the Guards was greater, at all explains the increased tendency to pulmonary affections?—I am not sufficiently acquainted with the statistics of mortality to answer that question.

9976. (*Sir J. Clark.*) Your opinion is that the chief source of disease in the army is the crowded state of our barracks?—I do think so; when I find so obvious and certain a cause as that, I feel very great difficulty in assigning other causes, for that appears to me to be of itself sufficient to account for it. It would certainly account for an excess, but whether for the whole of the excess I do not pretend to say.

9977. Would that account for the amount of consumption that there is in the army?—In a great degree, taking it together with the night-work which the men have to do.

9978. (*President.*) Do you attach much importance to night work, when it appears that the mortality of the troops, who serve but two hours at a time and one night in four upon sentry duty, is very much higher than that of the police, who serve eight hours continuously for seven nights in the week?—I am quite aware of that circumstance, but I am aware that the police live a great deal better than a soldier does. The soldier issues suddenly from a heated guard-room to stand or pace slowly at his post; the policeman has a wider range, and can move at any pace necessary to keep him warm.

9979. (*Sir T. Phillips.*) Of what value to the public service is the ordinary sentry duty of the soldier, which appears so injurious to himself?—I think, that to the soldier it is of more value than to the public; you must give something to soldiers to do, in which their discipline is called into exercise, or you will not keep up their discipline.

9980. (*Mr. J. R. Martin.*) The duties of a sentry on service are of the most vital character?—The safety of the army depends upon them.

The witness withdrew.

Dr. John Sutherland.

Dr. John Sutherland, further examined.

9981. (*President.*) Am I right in thinking that there is a published letter of yours to Lord Shaftesbury, in which you state that the sanitary recommendations made by you had all been anticipated by the army medical officers on the spot?—In reply to your question, I have to state that the letter to which you refer was written on the 19th of July 1855, and was printed in the "Times," and that it contains no expression of my opinions such as you have mentioned. I have introduced into it sanitary remarks on three places, Scutari, Balaklava, and the Camp. With regard to Scutari, there is not even a hint of my having had any knowledge of any recommendations having been made. In regard to Balaklava, I do not allude to any recommendations but our own. But with regard to the camp, there occurs a passage which I shall read; but as you will see it refers solely to the camp:—"It is also very satisfactory to state, that "almost every practicable improvement we have "advised for the camp, we have found already in operation in some part of it. We have only wished the "worst practices to be avoided, and the best systematically adopted. But in doing this, all depends "on the commanding officers of the regiments, and "hence different regiments show different degrees "of improvement. We have also found the medical "officers thoroughly alive to the nature of the changes "required, representing them to the authorities, but "without power to carry them out." "These two "facts appear to me to point out clearly, that military "hygiene should be a portion, and a compulsory portion of the education and examination for service of "every officer, whether medical or not, entering the "service. If it were inculcated as a duty, that the "main end of official routine is not only discipline, "fighting, and treating disease, but also preserving "the troops in a state of efficiency, I believe that a "vast deal of the loss of life in armies would be "avoided." Referring to our instructions I proceed to say,—"We have made every needful inquiry and "recommended the adoption of all necessary measures. We have had the most needful of these "measures carried out under own inspectors, and "those in the camp are being carried out by the "military authorities, charged with their usual execution. You are aware, however, that in all sanitary "matters unremitting care is required to ensure continued success, and that any relaxation may do "mischief. The measures themselves, moreover, are "of such a nature that only those daily administering "them can fully know what is done and what is "undone; and hence the necessity for the examination in hygiene I have referred to. Without that no "mere external pressure, such as we have exercised, "can be of lasting benefit, because the parties who have "to carry them out have no knowledge of their necessity or importance, and hence I have heard the most "useful suggestions coming from military medical "officers, called 'doctors' crotchets,' and thrown "aside." In connection with this passage, I would beg to quote the following from page 125 of the Sanitary Commission Report. In the section as to the camp before Sebastopol we state,—"In pointing "out the remedies, we considered it to be most "advisable to recommend improvements we found "already in operation in some part or other of the "camp, on the very obvious principle, that what had "been done successfully in one regiment might be "readily done in another. This course was always "taken; and where we found that something further "was required to be done, we endeavoured as far as "possible to limit our requirements to what was barely "necessary." Permit me to add that in considering the evidence given by me at the last meeting, in reply to Sir John Hall's remarks on the sanitary commission, it has occurred to me that some expressions in it might appear to reflect on the army medical service generally. I am most desirous of avoiding the very appearance of this, and I must therefore beg that any critical remarks of mine may be understood as applying as I intended them, solely to imperfections in the sanitary system, which ought not to be charged against the medical service, and in no sense to the service. I have had abundant opportunities of estimating the zeal, devotion, and I would add heroism of the army medical officers in the field; and I have more than once expressed in this room my high esteem for this portion of the public service; I hope, therefore, the object of my remarks will not be misunderstood, and that the practical result of our labours here on their behalf will be to remove every reasonable cause of complaint on the part of medical officers, and to make the service as efficient in every point as possible.

Adjourned.

ANSWERS to WRITTEN QUESTIONS addressed to Miss NIGHTINGALE by the COMMISSIONERS.

9982. Have you, for several years, devoted attention to the organization of civil and military hospitals?

Yes, for thirteen years.

9983. What British and foreign hospitals have you visited?

I have visited all the hospitals in London, Dublin, and Edinburgh, many county hospitals, some of the naval and military hospitals in England; all the hospitals in Paris, and studied with the "sœurs de charité;" the Institution of protestant deaconesses at Kaiserswerth, on the Rhine, where I was twice in training as a nurse; the hospitals at Berlin, and many others in Germany, at Lyons, Rome, Alexandria, Constantinople, Brussels; also the war hospitals of the French and Sardinians.

9984. When were you sent out to the British war hospitals at Constantinople?

We arrived at Constantinople on November 4, 1854.

9985. What hospitals did you find occupied there by the British?

Two large buildings on the Asiatic side, near Scutari, viz., a Turkish barrack and a Turkish military general hospital, both of which had been given over by the Turkish government for the use of the British troops.

9986. How many patients did they contain at that date?

The barrack contained 1,500, the general hospital 800 patients, total 2,300.

9987. By how many nurses and ladies were you accompanied?

By 20 nurses, 8 Anglican "sisters," 10 nuns, and 1 other lady.

9988. Where did you take up your residence?

We were quartered the same evening in the barrack hospital, and two months afterwards, a reinforcement of 47 nurses and ladies having been received from England, we had additional quarters assigned us in the general hospital, and later at Koulali.

9989. How long did you reside in those hospitals?

Till the evacuation of Turkey by the British, July 28, 1856.

9990. Did you visit the hospitals in the Crimea?

Three times. I *visited* the regimental hospitals; I remained in the general hospitals about six months.

9991. For what purpose did you visit the Crimea?

Each time to place or to reinforce nurses in the Crimean general hospitals. The first time, for the general and Castle hospitals at Balaclava; the second, for the Castle and Monastery hospitals; the third, for the two land transport general hospitals, for which nurses had been "required" by the principal medical officer of the army in the east.

9992. Was that purpose effected?

Yes; although difficulties sometimes interrupted the work.

9993. To ascertain the efficiency of the sanitary or medical organization of the army, it should be tested by its results in peace and in war?

Certainly, in both.

9994. What tests under those two conditions exist, and are available for our instruction, particularly in reference to the state of war?

The barrack, and the military hospital exist at home and in the colonies as tests of our sanitary condition in peace; and the histories of the Peninsular war, of Walcheren, and of the late Crimean expedition, exist as tests of our sanitary condition in the state of war.

9995. Is it necessary that you should refer at all to the hospitals of Scutari, or to the Crimea, as inquiries on these subjects have already been instituted?

We have much more information on the sanitary history of the Crimean campaign than we have on any other. It is a complete example—history does not afford its equal—of an army, after a great disaster arising from neglects, having been brought into the highest state of health and efficiency. It is the whole experiment on a colossal scale. In all other examples, the last step has been wanting to complete the solution of the problem.

We had, in the first seven months of the Crimean campaign, a mortality among the troops at the rate of 60 per cent. per annum from disease alone,—a rate of mortality which exceeds that of the great plague in the population of London, and a higher ratio than the mortality in cholera to the attacks; that is to say, that there died out of the army in the Crimea an annual rate greater than ordinarily die in time of pestilence out of sick.

We had, during the last six months of the war, a mortality among our *sick* not much more than that among our *healthy* guards at home, and a mortality among our troops in the last five months two-thirds only of what it is among our troops at home.

The mortality among troops of the line at home, when corrected as it ought to be according to the proportion of different ages in the service, has been, on an average of 10 years, 18·7 per 1000 per annum; and among the guards, 20·4 per 1000 per annum. Comparing this with the Crimean mortality for the last six months of our occupation, we find that the deaths to admissions were 24 per 1000 per annum; and, during five months, viz., January—May, 1856, the mortality among the troops in the Crimea did not exceed 11·5 per 1000 per annum.

Is not this the most complete experiment in army hygiene?

We cannot try this experiment over again for the benefit of inquirers at home, like a chemical experiment. It must be brought forward as a historical example.

9996. Will you now state as nearly as you can how many sick and wounded soldiers were received in the hospitals which you have named at Scutari?

From August 1854 to May 1856, about 29,000 are said to have been admitted at the two hospitals at Seutari above mentioned, to which a third and smaller one was added, the palace of the Sultan at Haida Pacha near Scutari, also two ships for convalescents in the Golden Horn at Constantinople, a very small hospital for the artillery stationed at Pera, and a ward over a cavalry stable at Seutari. A large number of cases also went to the hospitals of Smyrna, Koulali, Abydos, and Renkioi.

9997. What was the prevailing character of the diseases?

During November, December 1854, January, and half February 1855, they were scurvy and diseases of the scorbutic type, viz., diarrhœa, dysentery, frostbite,* rheumatism, such diseases as generally arise from bad food, deficient clothing, fatigue, exposure, and damp.

During the latter part of February, March, April 1855, the scorbutic type declined; and diseases of the malarial type, typhoid, continued and remittent fever, dysentery, diarrhœa, and cholera began to prevail—to a great extent the result of bad drainage, bad ventilation, overcrowding, nuisances, organic effluvia, malaria, and damp.

9998. Did it appear to you that many diseases were induced, and others were aggravated in those hospitals?

Typhus attacked both sick and well in hospital. During the month of November 1854 alone, we had 80 recorded cases of hospital gangrene. Out of 44 secondary amputations of the lower extremities, 36 have died. Cholera broke out frequently both among sick and well. Also, there were frequent relapses of fever and diarrhœa, and the wounded suffered much from both, and, having come in for wounds, they frequently died from fever or diarrhœa.

9999. How many British soldiers died in those hospitals during the period of your residence?

About 4,600.

10,000. Can you state the number of deaths, month by month, in those hospitals; and the maximum of deaths on any one day?

The following is the head roll of burials at Scutari, not including civilians:—

November, 1854	368	October	46
December	667	†November	25
January 1855	1,473	December	7
February	1,151	January 1856	4
March	418	February	4
April	169	March	3
May	76	April	2
June	49	May	1
July	63	June	0
August	60	July	1
September	47		4634

The greatest number of burials on any one day was on Jan. 25, viz., 71. On Jan. 26, it was 70. The burials took place, as a rule, within 24 hours of the deaths.

10,001. You had the best opportunities for observing the condition of the soldier when he entered the hospitals; while he resided in them; when he died and was sent to the cemeteries; when he was sent home an invalid, and when he rejoined the army?

Yes; I was never out of the hospitals.

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* The cases called frost-bite, were, according to their own account, contracted under circumstances showing no sufficient reason, in the degree of cold, for the effect. They should rather have been called gangrene, from a scorbutic tendency, aggravated by cold.

† This does not include the mortality from cholera in the month of November 1855, in the German Legion and Osmanli Horse Artillery (which were then quartered in the Barrack Hospital).

10,002. Will you describe briefly his condition under those various circumstances?

(I.) The sick, from the landing in the Crimea September 1854 to the end of January 1855, were brought to Scutari in 56 transports, some of which were sailing vessels and others steamers.

The sick were received on board, and sometimes detained for several days before the vessel sailed. The voyage for sailing ships was usually six days, and for steam ships under two days, but the average time the sick were detained on board was eight days and a half from the time of their embarkation at Balaklava till they were disembarked at Scutari The numbers which died on board are variously stated, but they are probably in every instance understated.

It appears that about 13,093 sick were embarked during the four months and a half, of whom about 976 died. This is a mortality of no less than 74½ per 1,000 in the short space of eight days and a half. Had the embarkation of sick gone on for 12 months and the same high rate of mortality prevailed among them, the proportion of deaths would have amounted to 3,182 per 1,000. In other words, the population of the sick transports would have perished on the Black Sea upwards of three times.

The following table gives the monthly details of this catastrophe.

Arrived at Scutari.

Months.	Sick embarked arriving at Scutari during the month.	Died on Voyage.	Deaths per 1,000 embarked.	Deaths per 1,000 on cases treated at Scutari.
1854				
Sept. 15–30 -	3,987	311	78	
October - -	567	15	26·4	
November -	2,981	162	54·3	
December -	2,656	226	85	
1855				
January -	2,902	262	90	321*
	13,093	976	74·5	198†
February -	2,178	41	19	427
3 weeks ending Mar. 17.	1,067	5	4·7	315
Ending Apr. 7	860	4	4·6	144

On a voyage no longer than from Tynemouth to London there died 74 out of every 1,000 sick embarked during four months and a half. The loss in individual transports was much greater than this average. The "Caduceus" embarked 430 sick September 23, 1854, and disembarked the survivors at Scutari September 29. During the six days the sick were on board there died no fewer than 114 men, being 26½ per cent. of the total number embarked, or in the ratio of 16,160 per 1,000 per annum.

Either these sick transports were in a state utterly unfit for sick, as regards overcrowding, ventilation, cleanliness, and attendance; or sick were shipped in a condition utterly unfit for such a voyage. Of cholera cases, those who lived to arrive at all often arrived in a state of collapse only to die.

The superficial space, allowed in these transports, was fixed by a board of inspection, formed at Balaclava, December 12, 1854, at 6 feet by 2½ feet for sick, and 6 feet by 3 feet for wounded men. The height between decks varied from 6 to 8 feet. One vessel only had a height of 9 feet in some parts, and one a height of 8½ feet.

* Viz., from Jan. 7 to Jan. 31, 1855. † Oct. 1, 1854—Jan. 31, 1855.

(II.) During February, it will be seen that the mortality among the cases from the Crimea declined. The per-centage of mortality upon those embarked on board the transports fell from 90 to 19 per 1,000. But the mortality at Scutari rose, viz., from 321 to 427. And, even during the three weeks ending March 17, when the mortality on board the transports, which had been, from September 15, 1854, to January 31, 1855, above 74 per 1,000, fell to under 5, the mortality at Scutari still maintained its fatal preponderance, and continued at 315 per 1,000, half as much again as it had been for the four months, October 1, 1854, to January 31, 1855, which was 198.

(III.) The burial-ground at Scutari was overcharged, and sanitary precautions were not sufficiently observed.

(IV.) The adjutant's table below gives the numbers of men sent home for the months of

October 1854	90
November	302
December	559
January 1855	507
February	489
March	1,120

It will probably be inferred from this that there were, at first, no sufficient arrangements for relieving the hospitals of invalids, who consequently took up accommodation required for sick; invalids not likely to return to duty are those for whom transport is required. (Upon the sick, removal may have a doubtful result.) It is a well-known fact that, had it not been for sources of private supply, these invalids would have been badly off for clothing, going home.

(V.) The destitution of the men rejoining their regiments, of whom so many had lost their kits, would have been great, had it not also been for sources of private supply. It is well known that they arrived in hospital during the first part of the winter with "little or no clothing." I have seen men brought in with nothing on but an old pair of regimental trousers, not their own, a dirty blanket, and a forage cap. In December 1854, a quartermaster-general's store, for supplying the men going out of hospital with clothing, was established. But it was still found necessary to supply the men with some articles from private sources, upon requisition from the medical officers.

10,003. To what do you mainly ascribe the mortality in the hospitals?

To sanitary defects.

10,004. Will you now state what the rate of mortality was? And how you have calculated it?

I have calculated it, (1.) on the cases treated; (2.) on the sick population of the hospitals.

I beg to put in a Table.

Average of Weekly States of Sick and Wounded, from October 1st to January 31st, deduced from those given by R. W. Lawson, Deputy Inspector General, Principal Medical Officer, Scutari.

Date.	No. of Days.	Sick Population of the Hospitals (mean of Weekly Numbers remaining).	Cases treated (mean of admissions and discharges including Deaths).	Deaths.	Mortality.	
					Annual rate per cent. per annum on the sick population.	Per cent. on Cases treated.
1854. Oct. 1st to Oct. 14th	14	1,993	590	113	148	19·2
,, Oct. 15th to Nov. 11th	28	2,229	2,043	173	101	8·5
,, Nov. 12th to Dec. 9th	28	3,258	1,944	301	121	15·5
,, Dec. 10th to Jan. 6th (1855)	28	3,701	3,194	572	202	17·9
1855. Jan. 7th to Jan. 31st	25	4,520	3,072	986	319	32·1
	123	3,140	10,843	2,145	203	19·8

February 1855.

Hospitals.	Sick Population.	Cases treated.	Deaths.	Rate of Mortality per cent.	
				Annually on sick Population.	On Cases treated.
Scutari and Kululi - -	4,178	3,112	1,329	415	42·7
Kululi alone - - -	648	581	302	608	52·0

Statistics of the Barrack, General, Palace, and Kululi Hospitals on the Bosphorus for periods of 21 Days, commencing February 24th and ending June 30th 1855.

Time.	Sick Population of the Hospitals (mean of Numbers remaining at beginning and end).	Cases treated.	Deaths.	Mortality.	
				Annual Rate per cent. per Annum on the Sick Population.	Per cent. on Cases treated.
1855.					
February 25 } and the 20 following days. - -	3,779	1,621	510	235	31·5
March 18 } - -	3,306	1,650	237	125	14·4
April 8 } - -	2,803	1,190	127	79	10·7
April 29 } - -	2,018	1,350	70	60	5·2
May 20 } - -	1,504	996	48	56	4·8
June 10 } - -	1,442	1,266	28	34	2·2
126 days - - -	2,501	8,073	1,020	118	12·6

I must, however, state that the statistical returns made at various times are very discordant.

Then I find that some of the methods of calculation which I have seen employed give an imperfect idea of the mortality to persons who have not closely studied these matters.

I give an illustration :—

I take a hospital of 1,000 beds, constantly occupied during one year, into which during the year 10,000 sick are admitted, and 10,000 discharged, viz., 1,260 dead, and the rest cured. Then, if we divide the deaths in the year by the *average strength*, as is ordinarily done in determining the mortality of the whole army, it will be found that the 1,260 deaths in a year out of a mean strength of 1,000 imply that the mortality was at the rate of 126 per *cent.* per *annum*. If this method be employed, it will show the comparative sanitary condition of the sick in two or more such hospitals.

Again, as the number of deaths (1,260) took place among 10,000 cases, the mortality was at the rate of 12·6 deaths in every 100 cases.

In the case supposed, one of the imperfect methods of calculation in use, to which I have referred above, would make the cases 62,000, out of which the 1,260 deaths occurred, and the mortality of these cases would be stated at 2 per cent.

The way in which this result is obtained is sufficiently simple. 1,000 cases would remain in the hospital at the beginning of every week ; the new method counts the cases remaining every week, or fifty-two times in a year, and adds to them the cases admitted, so that, in addition to the 10,000 cases really treated, it obtains 52,000 fictitious cases, simply by counting the same man rather more than six times ; that is, by counting the patients remaining 52 times annually, and adding them to the new patients admitted.

If the number remaining at the beginning of every month were counted, 12,000 would be added to the 10,000 real cases treated.

It is evident that, by counting the cases *remaining* at the beginning of every day, or oftener, the *cases* may be multiplied to any conceivable extent.

By dividing the *weekly* deaths by the force in the Crimea, as was done in the published returns, the high mortality in the Crimea *appeared* to be exceedingly low. For people naturally took the mortality per cent. per *week* for the mortality per cent. per *annum*.

For the purposes of accurate comparison it is necessary to reduce all our facts (1.) to unity of time, (2.) to unity of strength, or numbers under observation.

I find, after consulting the best statistical authorities, that the mortality of hospitals can be compared in two ways, which mutually check and confirm each other: (1.) by dividing the deaths by the mean "strength" of the sick in hospital, and reducing the mortality to that which would obtain if the time of observation were a year. By this method, it will be seen in the Table I give in, that the mortality in the Bosphorus hospitals fell from 415 per cent. per annum in February to 235 per cent. per annum in the three weeks ending March 17, 1855, to 125, 79, 60, 56, and 34, in six successive periods of *three weeks* each.

By the second method the *deaths* are divided by the number of *cases treated*. Where the number of sick is stationary, the numbers (1.) admitted and (2.) discharged (including deaths) must be equal in a given time. The number of cases treated will be represented by the numbers either admitted or discharged, as they are equal. When the number of sick increases or decreases, the numbers admitted and discharged will differ; but the number of *cases treated* will, in all ordinary cases, be nearly represented by taking the mean of the numbers admitted and discharged. Thus 6,751 patients were *admitted* into the Bosphorus hospitals in the 126 days: February 25—June 30, 1855, and in the same period 9,392 patients were discharged. The cases treated are represented by—

$$\begin{array}{r} 6{,}751 \\ 9{,}392 \\ \hline 2\,)\ 16{,}143 \\ \hline 8{,}072 \end{array}$$

As the deaths were 1,020, the mortality on the cases treated was 12·6 per cent.

By this method, the mortality of the cases was at the rate of 31·5 in the first three weeks, and fell progressively to

Per cent. of cases treated - { 14·4, 10·7, 5·2, 4·8, 2·2 }

As 2,501 were under treatment 126 days, the days of sickness were $2{,}501 \times 126 = 315{,}126$ days, which allows—

$$\frac{315{,}126}{8{,}073} = 39 \text{ days}$$

to the treatment of each case on an average.

In the first period the cases were under treatment about 49 days; in the last, 24 days.

While the mortality fell from 31·5 to 2·2, the duration of the cases fell from 49 to 24 days.

Note.—Showing the reason why the cases treated are represented by the mean of the numbers (1.) admitted and (2.) discharged in a given time.

The number of cases treated (= C) is the number of cases admitted and followed from their commencement to their discharge from the hospital, dead or alive.

When the hospital is (1.) opened and (2.) closed empty, the number of cases treated is the same as the number admitted.

But the hospitals of the Bosphorus contained 3,975 sick soldiers on February 25, 1855; 6,751 sick soldiers were admitted in 126 days, and on 30th June 1,334 remained under treatment.

Now some of the 3,975 cases in the hospital at first (= F.) had just entered; others had been one, two, three days under treatment, and others were just on the point of leaving. On an average it may be assumed that they had been treated during half the average term of treatment, and it may be assumed that 3,975 treated for a half term—as respects the mortality—may be held to represent half that number, or 1,987 cases treated for the full term. To obtain the cases treated, we therefore add 1,987 to 6,751, the new cases admitted, thus making 8,738, from which half the number of 1,334 cases remaining on June 30, or 667, must be deducted, leaving 8,071 to represent the

number of cases treated. Half the 1,334 cases remaining (= 667) (= $\frac{L}{2}$) are deducted, because those 1,334 cases have been already counted in the *admissions* as whole cases, although they have only been half their time under treatment, and are fully represented by 667.

The equation will stand thus, putting A for new cases admitted, F for cases remaining on the first day, and L for cases remaining on the last day:

$$A + \frac{F}{2} - \frac{L}{2} = C.$$

But, by putting D for cases discharged, it may be shewn by similar reasoning that

$$D - \frac{F}{2} + \frac{L}{2} = C.$$

And, on adding these two equations together, we have—

$$A + D = 2C \therefore C = \frac{A + D}{2}$$

The cases treated are nearly represented by the mean between the new cases admitted (A.) and the cases discharged (D.) dead or alive. It is here assumed that the mortality is at the same rate in the latter half as it is in the first half of its sickness. If it be greater or less the result will be slightly affected, according as the numbers remaining at the beginning and end of the period of observation are in excess.

10,005. From your experience of the great mortality of the hospitals at Scutari, and the manner of estimating it, do you consider the weekly state of the army likely to give a correct idea of the disease and mortality?

From the extracts given in the Appendix, which are taken from the letters of the principal medical officer to the commander of the forces, it will at once be seen, that what the commander of the forces and the war department want to know and ought to know about the health of an army in the field was not supplied them.

What they want to know is (1.) how long the army will last at the then rate of mortality.

(2.) Whether the diseases are preventible from which the mortality arises.

(3.) What proportion of the army is inefficient from sickness.

1. The mere information that "the admissions to strength have been in the ratio of 3·93 per cent." during "the present *week*," and "the deaths to strength 0·38 per cent." (*see Note A. annexed*), is simply misleading to the authorities, unless indeed, which is hardly likely, they are thoroughly *au fait* at statistical inquiries.

The standard of comparison all over the civilized world is the per-centage of deaths per *annum;* also the per-centage of admissions into hospital in the same time.

And, without reference to the same standard, it is impossible for the most experienced man to judge.

0·52, 3·93 per cent. look nothing.

But multiply 3·9 by 52=2,028, in order to get the annual admissions per 1,000; and it will be found that the whole force will go twice through hospital in a year, at that rate. And multiply 14·3 (*see Note A. annexed*) by 52=7,436 per 1,000 per annum; and the whole force will go seven times through hospital in a year.

It is not, however, said whether this "sickness" of "14·31 per cent." is admissions, or remaining and admissions, or sick population. Probably it is the second. But is this a state of things to congratulate a commander of the forces upon, as being "pleasing" to him "to learn"?

Multiply 0·52 by 52 in the same way, and it will be found that the mortality is 270 per 1,000 per annum. In other words, that more than one fourth of the whole population of the army will perish in a year.

2. At a time when every one in the Crimea was expecting cholera, which actually did come, and is shortly after recorded by the inspector-general himself, the commander of the forces is congratulated on the "steadily improving" state of the "health of the army."

During the 10 weeks intervening between May 5 and July 14, 1855, 96 per cent. of all the deaths from disease were of the classes usually considered mitigable and zymotic. That is to say that, granting that the four per cent. were not preventible, there might have been saved to the commander of the forces a large part of the 96 out of every hundred men he lost from disease.

Is not this important to him to know from his returns at a glance?

3. For a commander in the field, the number of deaths among his men is, after all, not so necessary to him to know as the rate of inefficient men from sickness he has, and how far the sickness can be mitigated or prevented.

In January 1855 more than half the infantry were sick in hospital, and three fourths of all that sickness was zymotic, and so it continued from October 1854 till July 1855. Nay, even in that dreadful week which included the attack on the Redan, June 18th, 1855, even in that week nearly 65 per cent. of all the deaths in hospital were zymotic.

Of what vital importance it is to a commander and a government to know this?

Now take the unit of per 1,000 of the force per annum, and let the advantage of a comparison be shown, viz., of the mortality at different periods of our history in the Crimea.

Deaths per 1,000 per annum at different periods.			
January	1855	-	1,173½
	1856	-	21½
May	1855	-	203
	1856	-	8
Jan. 1 to May 31, 1855		-	628
Jan. 1 to May 31, 1856		-	11½

Crimea, May 1856.	Line at home.	Guards at home.
8	18·7	20·4

Thus we were losing in the Crimea, in May 1856, less than half of what we lose in the line at home, and little more than two-fifths of what we lose in the guards at home.

It is obvious that what is wanted is for the commander of the forces in the field and the Secretary of State for War to be made instantly and continuously acquainted, (both as to an army at home and in the field,) with not only (1) the real proportion of mortality, (2) the real proportion of disease; but also (3) the *kind* of disease and mortality.

Therefore—

1. Present strength.
2. Sick in hospital at a given date.
3. Total admissions since last report.
4. Total deaths since last report.
5. Per-centage of sick to present force.
6. Per-centage of deaths to present force *per annum*.
7. Per-centage of admissions from zymotic disease to total admissions.
8. Per-centage of zymotic cases in hospital to total sick.
9. Per-centage of deaths from zymotic disease, to total deaths from disease.
10. Admissions from wounds and deaths from wounds.

At short periods, both departments should be furnished with a statement of these 10 points, so as to appreciate them at a glance.

It may easily be ascertained what the weekly states for an army in the field are now, as furnished to the commander of the forces by his principal medical officer, and what the daily states furnished by his adjutant-general.

Something of the following I have seen:—

Weekly State.

1. Strength in field as given by adjutant-general this morning.
2. Admissions.
3. Deaths.
4. Present sick.
5. Admissions to strength.
6. Deaths to strength.
7. Sick to strength.
8. Decrease of mortality this week.

But nothing as to "per annum," or as to zymotic disease.

Now, is it surprising that the mortality of the army was high in the Crimea? Is it not a fact that the mortality of the army in peace exceeds that of men of corresponding ages in the general population? At home, the guards and infantry of the line suffer more from consumption and chest diseases than men in civil life, at the same ages, from all diseases put together.

The guards suffer twice as much from fever—more from fever in some barracks than in others, and more from epidemics in epidemic years than civil life.

There is no *à priori* reason for this. The mere statement of it would excite inquiry into its causes and remedies, if it were generally made known.

This may be summed up in a very few words with the aid of the following data supplied by Dr. Farr :—

No. 1. Rate of Mortality per 1000 per annum.

Effective men of the army at home.	Total	17·5
	Guards	20·4
	Line	18·7
Army ages. England and Wales	Country population,	7·7
	Whole population,	9·2
Army ages. Manchester, one of the unhealthiest cities		12·4

No. 2. Relative Mortality of the Army at home, and of the English Male Population at corresponding Ages :—

Ages.		Deaths annually to 1,000 living.
20—25	Englishmen	8·4
	English soldiers	17·0
25—30	Englishmen	9·2
	English soldiers	18·3
30—35	Englishmen	10·2
	English soldiers	18·4
35—40	Englishmen	11·6
	English soldiers	19·2

That is to say, that if the army were as healthy as the population from which they are drawn, they would die at one-half the rate they die at now.

The army are picked lives, and the inferior lives are thus thrown back among the mass of the population.

The health of the army is continually kept up by an influx of fresh lives, while those which have been used up in the service are also thrown back into the general population, and give a very high mortality.

The general population includes, besides those thus rejected by the army itself, (whether in recruiting or invaliding,) vagrants, paupers, intemperate persons, the dregs of the race, over whose habits we have little or no control.

The food, clothing, lodging, employment, and nearly all that concerns the sanitary state of the soldier are absolutely under our control, and may be regulated to the minutest particular.

Yet, with all this, the mortality of the army, from which the injured lives are subtracted, is double that of the whole population, to which the injured lives are added.

But, with regard to armies in the field, where half an army may melt away from zymotics alone, or be rendered inefficient just when its services are most wanted, not by wounds, but by disease, of how far more vital importance is it, then, for the authorities to be furnished with such information ?

The proportion of admissions and deaths from
Scurvy,
Cholera,
Dysentery,
Diarrhœa, and
Fevers of each class should be distinctly stated.

For an example of the importance of this, take the following, calculated from official returns for January 1855.

			Per 1,000 per annum to Strength.
Total admissions	11,290	hence	4,176
„ Deaths	3,168		1,173·6
	Admissions.		Deaths.
Scurvy	542		31
Scorbutic dysentery	181		44
	723		75

The deaths from scorbutic disease in that month are put down at 75 ; a month, when, as is well known, two-thirds of all

the deaths and admissions in the army were due to the scorbutic type of disease, for, see the following :—

	Admissions.		Deaths.
Acute dysentery	865		210
Chronic „	*143		578
Scorbutic „	181		44
Diarrhœa	4,191		1,199
Acute rheumatism	342		58
Chronic „	84		9
Frostbite	1,413		124
Scorbutus	542		31
	7,761		2,253

The larger part, if not all, of these 2,253 deaths may be ascribed to the scorbutic type of disease. For "scorbutic" read "bad food," &c., and you have the cause.

Yet this is not brought forward at all at the time, nor prominently at any subsequent time in our returns.

Again with an army in the field, to give the admissions and deaths for the field hospitals is to give no just idea of the mortality, because it is not stated how many of those admissions were sent to and died in the general hospitals at the base of operations.

In the case of the Crimea, till the spring of 1855, no account was rendered of these.

E. g. Published Return.

Crimea.

October 1, 1854—April 1, 1855.

Average strength.	Admissions.	Deaths.
28,623.	52,548.	5,359.

General Return.

Crimea and Scutari.

October 1, 1854—April 30, 1855.

Average strength.	Admissions.†	Deaths.
28,939.	56,057.	10,053.

10,006. This mortality is much higher in the early periods than it was in the later periods—higher than it is in civil hospitals, and much higher, too, than the mortality of cases treated in the homes of artisans. Will you state in what respects the sanitary conditions of the soldiers before and after March 17, 1855, differed from the sanitary conditions of patients in civil hospitals, and of the sick whom you have no doubt visited in their own humble homes ?

The sanitary conditions of the hospitals of Scutari were inferior in point of crowding, ventilation, drainage, and cleanliness, up to the middle of March 1855, to any civil hospital, or to the poorest homes in the worst parts of the civil population of any large town that I have seen.

After the sanitary works undertaken at that date were executed, I know no buildings in the world which I could compare with them in these points, the original defect of construction of course excepted.

10,007. What sanitary defects did you observe in the hospitals at Scutari, in regard to over-crowding, ventilation, cleanliness, and drainage ?

(1.) With regard to over-crowding both for barracks and hospitals, the regulation in our service is over-crowding. But at Scutari from the battle of Inkerman till the middle of February, even the regulation space was not adhered to. The men were laid on paillasses on the floor as close as they could lie ; there were two rows of beds in the barrack hospital corridors, where two persons could hardly pass abreast between foot and foot. I have seen 72 patients for a short time in a ward calculated by the inspector-general himself to hold 30.

For full six weeks we had in the barrack hospital 2,000 patients in the space allotted by regulation for 1,220 ; and for six weeks more, 2,200 in the space allotted for 1,600.

The regulation space is no more than one half of the space required, if the hospital were in a good sanitary state, but, as

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* The per-centage of mortality on acute and chronic dysentery was perhaps greater than ever has been known in any disease except the worst form of epidemic plague. It was no less than 78 per cent. of the cases.

† The admissions at Scutari were not given, because they were nearly all re-admissions from the Crimea.

When we see the loss *thus* given, the real extent of it strikes us. It stands thus :

	Strength.	Deaths.
Infantry	23,775	9,015
Cavalry	1,915	280
Artillery and Engineers	3,249	568
Undistinguishable		190
	28,939	10,053

Sir Alexander Tulloch gives the mortality for those 7 months, at a per-centage for the 7 months. I give it now per annum :

Strength of the army	28,939
Deaths in 7 months	10,053
Mortality per 1,000 per annum	600

the regulation space was actually reduced by one half, we have the following condition of matters :—

1. The space for each patient one fourth of what it ought to have been.
2. The sanitary condition of the buildings extremely defective.

Can we wonder at the high rate of mortality ?

(2.) With regard to ventilation, the hospitals were so insufficiently heated that the inspector-general was of opinion that the men would catch cold by opening the windows. Scarcely any other means of ventilation existed, or were provided. It is impossible to describe the state of the atmosphere in the barrack hospital at night. I have been well acquainted with the dwellings of the worst parts of most of the great cities in Europe, but have never been in any atmosphere which I could compare with it. I have produced statistics to the Commission, showing that the mortality on the sick population in January was at the rate of 319 per cent. per annum, the mortality in February at the rate of 415 per cent. per annum, while that on board the transports had fallen from 90 per 1,000 in January to 19 in February, showing the improved character of the cases. There is only cause for wonder that the mortality in Scutari was not more, as such an atmosphere as there prevailed was, perhaps, worse than that known to produce cholera and typhus epidemics among healthy persons.

Both ventilation and cubic space were better managed in the general than in the barrack hospital, but the other causes of disease were the same in both.

(3.) The ground about the palace hospital was very wet, from insufficient draining.

With regard to sewerage, the privies poured their poisons into the corridors and wards ; the sewers being loaded with filth, untrapped, and without ventilating openings, the tubes of the privies were their only ventilators, and the sewer gases blew into the wards and corridors. A change of wind so as to blow up the open mouths of the drains, was therefore not unfrequently marked by out-breaks of fever among the patients. And the state of the privies of the barrack hospital for several months, more than an inch deep in filth, is too horrible to describe.

With regard to cleanliness, the ground about the hospitals, with the exception of the general hospital, was extremely dirty. I have counted as many as six dead dogs just under one ward window. And the barrack hospital yard, of great extent, was so uneven, muddy, and filthy, as to cause a most unwholesome atmosphere.

The drinking water was not free from organic matter ; and on one occasion the dirty hospital dresses have been seen in the tank which supplied water.

A dead horse also lay for some weeks in the aqueduct.

The state of the floors was such, from want of repair, that the medical officer had to choose between leaving them dirty and washing them which produced erysipelas.

The wards washed in the morning have been seen quite wet at the evening visit.

The walls and ceilings were saturated with organic matter, and should have been lime-washed for safety at least once in three weeks, notwithstanding the inconvenience of such a proceeding for cases which could hardly be moved. The rats, vermin of all kinds, accumulations of dirt and foul air, which harboured under the wooden divans on which the men were laid, rendered the atmosphere still more dangerous to them.

There was a great absence of utensils, and tubs were used for several months in some of the wards, the effect of which on the atmosphere in which the men were need hardly be described.

The burial of the dead was conducted in such a manner, and so close to the general hospital as to affect the purity of the air.

I would refer the Commission to our statistics, which show that the mortality rose from 17·9 per cent. in December, on cases treated, to 32·1 per cent. in January, to 42·7 per cent. in February ; although in February we could scarcely be said to be much over-crowded, and the character of the cases from the Crimea had improved. What else could this increase be due to but to our defective sanitary condition ?

10,008. How were the sick provided with bedsteads, bedding, ward furniture, utensils, and clothing ?

The bedsteads in the general hospital were sufficient, some of theirs having been left by the Turks.

In the barrack hospital, only a small proportion of the patients had bedsteads in the month of November. There never was a sufficiency of iron bedsteads. Boards and trestles were gradually introduced, till all the patients were raised from the ground.

We had always a sufficiency of blankets, although often covered with filth and vermin. We never had anything but paillasses, excepting for the worst cases, to whom some hair mattresses were given out. The sheets were of canvas, so coarse that the men begged to be left in their blankets. It was indeed impossible to put men in such a state of emaciation into those sheets.

Generally speaking, I have no hesitation in saying that, with the exhausted constitutions of our men, the consequences were fatal of laying them on paillasses, only separated from the floor by the wooden divans in the wards, and by mats in the corridors, which were flagged with limestone, Maltese stone, or unglazed tile. At the same time, I wish to say that none of our men ever made a complaint to me of the hardness of their beds, but the reverse; and I derive my opinion solely from a long habit of watching the sick. Never should a paillasse be seen in a military hospital again without a mattress over it. Any number of mattresses could have been had, in an Eastern capital like Constantinople, any day, where every man carries about his bed with him. These would, of course, have been cotton.

With regard to ward furniture and utensils, there was in the barrack hospital an absolute deficiency of these things. A soldier is expected by our regulations almost to furnish his own hospital, with some slight assistance from the barrack department. Now, at Scutari, we had neither barrack department nor soldier's kit, for the men had to abandon their kits, as is well known, and did not recover them till a later period. The consequence was, that when we, on two successive occasions, opened newly-repaired divisions of the barrack hospital to an influx of some hundreds of patients, there was no furniture whatever in the wards but the beds. And all utensils, whether for eating and drinking, taking medicine, cleaning, washing, or other purposes, were deficient. There were also neither chairs, tables, benches, nor any other lamp or candlestick but a bottle. In January, I mentioned this to the then Principal Medical Officer, and he answered, "I perceive you are not aware that "these things are found by the barrack department." I also mentioned it in the presence of the inspector-general to the purveyor-general, and he answered, that he did not intend to supply the things, having no warrant to that effect, which was true.

I will put in a list of what was in store on January 1, 1855, in the way of ward furniture.

January 1,* 1855.

Plates (tin) -	- none	Bolsters -	- none
Candlesticks -	- none	Night caps -	- a few
Tin drinking cups	- none	Slippers - -	- none
Urinals (metal)	- plenty	Knives and forks	- none
Bed pans -	- some	Spoons - -	- none
Close stools -	- plenty	Flannel shirts -	- none
[but frames wanted		Socks, pairs -	- none
Tin pails for tea	- none	Drawers, pairs -	- none
[at present		Some tea pots and coffee pots	

* On this day, the number of patients who had arrived in the hospitals of the Bosphorus during the last fortnight amounted to 2,532, and were followed by 1,044 in the next six days.

With regard to clothing, a limited quantity of very good hospital dresses was in use among the patients. But many of the men came down almost without shirts, or indeed any kind of clothing, but a blanket and a pair of trowsers. From November till after the winter clothing was served out, the supply was very deficient, in hospital, either of shirts, socks, or other articles of underclothing.

10,009. The want of shirts, and indeed of almost all clothing, on the part of the men, being proved beyond the possibility of dispute by the statement of almost every official,—in General Airey's words, "the army was almost without clothes,"—What was the "enormous supply" which, as Commissioner Maxwell states, "co-existed with constant complaints of "the want of the articles in question"?

The number of shirts issued from the quartermaster-general's store at Scutari was, up to 15th February, 4,387, a number equal to the men discharged from hospital between December 5, the period when these issues commenced, and January 31, viz., 4,349.

The purveyor states that he issued from October 1 to February 15, 11,234 shirts, of which he says 2,500 were delivered to Miss Nightingale. Now, 800 only were delivered to her, the 2,500 having been made requisition for by her, but 800 only received. As usual, the amount of the requisition and not of the actual issue was debited. Another example of the fallacy of requisitions as vouchers for receipt, although there is no shadow of suspicion of dishonesty. (*See Note D. annexed.*)

The 800 appear again in Miss Nightingale's schedule; therefore deducting from 11,234
2,500

8,734 remain.

Miss Nightingale issued from November 10, 1854, up February 15, 1855—(*See Cumming—Maxwell Report*, p. 35.)
10,537 cotton shirts.
6,823 flannel shirts.

17,360

Of which 400 and 400 respectively were, as just stated, from purveyor's store.

Therefore, there were issued—
Shirts.
4,387 from quartermaster-general,
8,734 from purveyor,
17,360 from Miss Nightingale.

30,481

Up to December 4, it appears that the number found in patients' knapsacks was 22! (*See Note D. annexed.*)

Surely, in the above issues there can be found nothing extravagant or unnecessary, but, on the contrary, they must be thought absolutely indispensable, being, as they were, issued upon requisition from the medical officer; the quartermaster-general's issues only excepted, which were made upon inspection of the men's kits.

10,010. How were the sick provided with medical comforts, diets, and extra diets?

I do not consider the supply of these things to have been ever deficient in quantity. In quality the bread and meat were good, the eggs, fowls, and milk generally very bad; the arrow-root and port wine sometimes bad. At the same time the cooking was what was chiefly to be complained of. The waste in the wards was enormous, because the men were really unable to eat diets so cooked.

10,011. Were the kitchens and extra-diet kitchens sufficient?

There were no extra-diet kitchens at all till those of the female nurses were constructed, which were followed by the construction of one by the excellent staff-surgeon of one of the divisions of the barrack hospital. The general kitchens simply consisted of boilers and tin pots on Turkish braziers till M. Soyer improved them, in April 1855. Practically, although not theoretically, it was acknowledged by the medical officers, that in order to make the men eat at all, it was necessary to feed them almost exclusively on extras. It need hardly be stated that the extra diet system is cumbrous, wasteful, inefficient, expensive. (*See Note C. annexed.*)

10,012. Were any difficulties experienced in obtaining food, clothing, bedding, medical comforts, or extra diets, when procurable?

Difficulties were experienced in obtaining some articles of extra diet, shirts, clean linen, and bedding, ward furniture and utensils, light and fuel, even when procurable in the market or actually existing in store. I could mention many such examples. After May, 1855, however, no such difficulties, or very few, occurred at Scutari; but in that summer, in the Crimea, and even at a later period, they still existed.

10,013. What appeared to be the cause of such difficulties?

I would mention:—

(1.) The system of requisition.

(2.) That of requiring the soldier to bring the contents of his own kit into hospital, which, in war time especially, the time when most required, must oftenest be wanting.

(3.) The fear of being called a "troublesome fellow," which, to my positive knowledge, deterred medical officers from making repeated requisitions for articles which they knew to be necessary for their men, or for repairs, because they feared that such conduct would injure their prospects.

This will be denied. But it is true for all that.

(4.) And chiefly, the total want which existed and does exist of any scheme of organization for general hospitals.

Our system has always been regimental; and the only theory of a general hospital which exists in our service is that of an aggregate of regimental hospitals. This will not be denied, because the theory was and is still maintained by many senior medical officers.

10,014. How were they overcome, and what, in your opinion, would be the best way of preventing them in future?

(1.) The sanitary defects were first overcome by the Sanitary Commission, which arrived only March 6, 1855.

(2.) With regard to stores, I can best answer the question by putting in an abstract of some of the principal articles supplied from private sources to the hospitals, &c., at Scutari, on requisition from medical officers, as well as to those in the Crimea, and only after ascertaining, in most instances, that the articles did not exist in the purveyor's store or were not to be issued thence.

* Shirts (flannel and cotton)		50,000
Pairs of socks and stockings		23,743
* Pairs of drawers		6,843
* Towels		5,826
* Handkerchiefs		10,044
* Comforters		9,638
Flannel	yards	1,384
Pairs of slippers		3,626
Knives and forks		856
Spoons		2,630
Night caps		4,524
* Gloves and mits	pairs	4,545
Drinking cups		5,477
Tin plates		2,086
* Basins, zinc, &c.		624
Dressing gowns		1,004
Air beds and pillows		232
Thread and tape	packages	74
* Lanterns, candle lamps, and lamps		168
Preserved meats	cases	253
Meat biscuit	barrels	2
Isinglass and gelatine	lbs.	148½
India rubber sheeting	pieces, 325 yds.	26
Camp kitchens, cooking stoves and canteens		55
Boilers and stewpans		68

Tables and forms,	Brooms and scrubbers,
Baths,	Bedpans,
Soap,	* Tin pails,
Games,	* Combs, scissors, &c. &c.

were supplied with and without requisition.*

The issues of clothing were principally made before the issues of warm clothing took place in the Crimea; and even when these latter issues were being made, a letter dated January 27, 1855, was addressed by the Director General to the Deputy Secretary-at-War, recommending a clothing store to be formed at Scutari, for men discharged from hospital, which had, however, been done December 5, 1854.

It is but fair to add, for those who do not know the regulations of the service, that the articles marked with an asterisk form no part of hospital furnishing according to the regulations, and that, therefore, the fault was not in those who did not provide them. For the purveyor purveys according to his "warrants," but the soldier wants according to his circumstances. The absurdity lies in attempting to provide for war, an abnormal state of society, by normal rules, non-expansive.

(3.) With regard to system, I do not consider that the difficulties were ever overcome at all; all that was done was done by a violent expenditure, and the relaxation of all rule.

No deficiency existed in the purveyor's stores after May 1855 at Scutari; although I cannot say the same for some of the general hospitals of the Crimea. But this arose not so much from the non-existence as from the non-supply of the stores.

A far more serious question, however, than the want of stores which, with the Anglo-Saxon race, will always be supplied, in such cases, by private interposition, is, the non-organization of a system of general hospital government. For the clash of departments which now constitutes that system cannot be called a hospital government at all. It is a division with grounded arms. 1. The general officer commanding; 2, the quarter-master-general; 3, the adjutant-general; 4, the engineer's department; 5, the paymaster; 6, the commissariat; 7, the contractor; 8, the purveyor; 9, the medical department: these nine departments all step in and appeal to one another to do what each can to make a general hospital march upon regimental contrivances.

10,015. Will you state your opinion as to the best manner of organizing a general hospital, so as to make such hospital thoroughly efficient?

I will reply to this question under the three following heads. In general terms, the organization needed is,

(1.) One for sanitary purposes.

(2.) One for government.

(3.) One for supply.

(1.) The first is really the most important question. The sick might have been loaded with medical comforts, attended by the first medical men of the age; under such sanitary conditions as existed at Scutari, they had not a chance. And yet it does not appear that any adequate means had been applied for remedying the defects, after Dr. Burrell's unfortunate retirement from the service. Nay, what is more, at the time most easy, rather the only time to prevent these evils, viz. in October 1854, the hospitals in the East were reported

* A manufacture of stump pillows, bed-sore pillows—to the number of many thousands,—of arm-slings, and such like surgical needle-work, was always being carried on by the nurses. But as this is properly women's work, and it is hoped will always in future be done by them in military, and especially in war hospitals, no further mention of it is here made.

"satisfactory." This shows the low standard of excellence with which our medical officers were then satisfied; afterwards it was too late. The evils were remedied when the mischief was done. How much easier it would have been to prevent them!

I may quote, in corroboration of this statement, one made by the principal medical officer of the army in the East himself, in the published despatches.

"Dr. Hall to Lord Raglan, March 2, 1855.

"* * * *. Out of 442 patients treated in the general hospital "at Balaclava, between February 18–24, only three casualties "have occurred, which I think may fairly be termed a low "rate of mortality, considering the class of patients that are "generally sent in there for treatment, men brought down "from camp, and found too ill to embark when they arrive at "Balaclava."

The above mortality is 12 per month, or 27 per 1,000 per month. If these men had been sent to Scutari in February, there would have died not 12 but 189. The deaths to cases treated at Scutari in February being 427 per 1,000, instead of 27 per 1,000, and from February 25 to March 17, 315 per 1,000.

And, according to Dr. Hall's statement, these cases treated at Balaclava were kept there, because they were in a worse state than those sent down to Scutari.

The distinction between personal and public hygiene must not be overlooked. It is acknowledged in civil life. The officer of health of towns, who was first proposed by Mr. Martin, does not do the work of the physician or surgeon; and, on the other hand, you do not send for your physician or surgeon to drain your street. Had an officer of health been attached to the quartermaster-general's department at the base of operations, who would have put to rights those buildings before we occupied them, how much life would have been spared! This officer should have full powers, through the quartermaster-general's department, to see 1, to the draining of sites; 2, to the sewerage; 3, to the cleansing of outskirts; 4, to the ventilation; 5, to the water supply; 6, to the lime-washing and cleanliness of the buildings; 7, to the allotment of cubic space; 8, to the sanitary conduct of burials.

There is quite enough for one man to do here. There is no more need for this administration of the hygiene of buildings to clash with that of the personal hygiene of the patients, which must be left to the medical officers, than in precisely the analogous case of civil life, where no man ever thinks of confounding the two.

Before and after the works executed by the sanitary commissioners, begun in March 1855, the hospitals at Scutari bore a similar sanitary difference to that which the gaols of the last century, which were pest houses, did to Colonel Jebb's prisons of 1857, the most healthy buildings in existence.

The rate of mortality in the hospitals was higher in February than in January, although the mortality on board the sick transports had fallen off from 90 per 1,000 in January to 19 in February, proving that the sanitary condition of the hospitals was deteriorating (although the number of sick had diminished), while the sanitary state of the transports and the condition of the sick was improving. The mortality, even to March 17, continued higher in these hospitals than it had been during the average of the four months, October 1854, November, December, and January 1855. The sanitary works were then begun, and, after their completion, the mortality fell to less than one-sixth of what it was when the barrack and general hospitals were first occupied together in October 1854, and to one-nineteenth of what it was in February 1855. What other inference can be drawn from such statistics and conditions but this, that, had nothing been done, before four months were out, or as soon as the hot weather set in to give fresh strength to the seeds of epidemic disease buried among us, the hospital population of the Bosphorus would have been swept from the face of the earth, and there would have been no one left in those lazar-houses to tell the tale? Civil life is full of similar lessons.

I am bound to say, that the military hospitals I have seen in England, Portsmouth, Chatham, Brompton, are almost as much in want of certain sanitary works as Scutari.

2. Government.

(2.) One executive responsible head, it seems to me, is what is wanted in a general hospital, call him governor, commandant, or what you will; and let it be his sole command. Let him be military, medical, or civilian officer, as the possession of administrative talents point out a man for the work.

The departments should not be many :—

1. A governor, solely responsible for everything but medical treatment.
2. A Principal Medical Officer and his staff, relieved of all administrative duties, and strictly professional.
3. A steward, who should fulfil the duties of purveyor, commissary, and barrackmaster, and supply everything, subject to the governor.
4. A treasurer, who should be banker and paymaster.
5. A superintendent of hospital attendants, who should undertake the direction of the cooking, washing, care of hospital furniture and government of orderlies.

All these officers to be appointed at home by the War Department.

According to this plan, the governor would cumulate the functions of quartermaster-general and adjutant-general, and therefore the sanitary officer mentioned before would be attached to him instead of to the quartermaster-general. The governor would be solely responsible for carrying out the works advised, and for engaging the labour requisite to do so.

(3.) Supply.

With regard to the mode of supply, let the steward furnish the hospital according to a fixed scale, previously agreed upon. The mode of supply by requisitions is faulty both ways, both in pretending to supply that which is not in store, and in not supplying that which is. For the requisition remains, although the supply has never been given. And the supply is often not given, although it is in store.

With regard to food, let the steward make contracts, subject to the governor's approval, and with power to buy in the market at the contractor's expense, if the contractor fails.

A scheme of diets should be constructed, according to the most approved authorities, in order to save the cumbrous machinery of extra diet rolls.

Equivalents might be laid down, so as to afford the necessary choice, depending on the nature of the climate, the season of the year, the state of the market, the productions of the country, &c.

10,016. To what extent and in what manner could female nursing be rendered available in general hospitals attached to an army in the field or at home ?

Female nursing might be introduced in general hospitals both at home and in the field, if only women of the efficiency, responsibility, and character of head nurses in civil hospitals be appointed. Say one to every 25 bad cases; the orderlies doing the duty of assistant-nurses in civil hospitals under the head female nurse.

But she must be in charge of all that pertains to the bed-side of the patient, of his cleanliness, that of his bed and utensils, of the administration of medicine, of food, of the minor dressings not performed by the surgeon, in short, of all that concerns the personal obedience of the patient to the orders of the surgeon. She must accompany the surgeon on his visits, and receive his orders. She must also report any disobedience of the orderlies, as far as regards the patient's personal treatment.

There need be no clashing with the ward-master or hospital serjeant. On the contrary, it would be the duty of these to enforce the nurse's authority. They will have enough to do besides with returns and accounts, and with enforcing discipline as to hours, meals, clothing, &c. among the orderlies out of ward.

The female nurses should be of course under a female head, whose duties must be carefully arranged so as to be in accordance with the code of hospital regulations.

10,017. Are you of opinion that female nursing could be employed advantageously in regimental hospitals ?

I am not.

10,018. What was the method in use at Scutari, when you went there, for receiving and admitting sick and registering their admissions and diseases, and how were the results, deaths, and burials recorded ?

Up to the middle of February 1855, the method said to exist was the following :—The adjutant or his serjeant stood at the landing-place or hospital gate and took the names of those who were able to speak, receiving a verbal report from the officer in charge of the number who had died during the voyage. At first, there was no arrangement for registering the sick when they were received into hospital. And the erasure of the man's name from the diet roll was at one time the only record of his death, excepting the adjutant's head roll of burials.

I believe that the medical officer in charge always endeavoured to make a nominal roll on the voyage from Balaklava to Scutari; more than one has stated that it took him half a day from his professional duties about the sick to do so. But, whatever this nominal roll was, it went to the principal medical officer's office, and not into the wards; one copy was given, I have been told, to the deputy assistant quartermaster-general on landing.

But at what period this was first done I am not aware. It has been stated to me by several medical officers that, even as late as March 1855, the inspecting medical officer of transports, upon going on board, frequently found this list imperfect, owing to the illness of the medical officer in charge, or other unavoidable cause, and had to complete it then and there.

Till the middle of February, or later, we had no bed-tickets, and no regular death returns. It is well known that the sick were put on board at Balaklava without nominal or numerical lists up to February 1855. Upon their admission at Scutari, an assistant-surgeon has been charged late in the evening to take the names, regiment, regimental number, &c., and to make the diagnosis of above 100 patients before nine the next morning. One twentieth have been known to die before they could give their names.

After the end of March all this confusion ceased. But it was not till the end of April that a census of the hospitals was taken, and returns "squared" with the adjutant-general in the Crimea.

Returns probably existed of which I knew nothing. I am speaking only, first, of what I saw; second, of what I was informed by witnesses on the spot and at the time.

The conclusion I draw from all this is, not that any one was in fault, for all were burdened with work beyond their strength, but that there was at first no system of registration for general hospitals, and that a registrar is an essentially necessary officer for such an institution.

In consequence of the great confusion of the hospitals from the battle of the Alma till a late period of the winter of 1854–55, a number of men were buried from the hospitals, exceeding in six months the deaths reported in the orderly room by 530. But the deaths reported in the orderly room exceed those reported in the hospital books,

In November by	- -	12
„ December „	- - -	143
„ January „	- -	125
		280

while, as if to make up the lost ground, the medical returns, which had exceeded the orderly room returns

by 12 deaths in October, exceed again	
by 253 „ February,	
	265

bringing the sum of deaths very nearly equal. The adjutant having buried 280 men more than the total number reported by the inspector-general as dead, the account had to be balanced at a subsequent period.

By the census taken of the hospitals, April 30, 1855, it appeared that 517 non-commissioned officers and soldiers had been buried whose deaths were unrecorded. An official report was then sent up to the adjutant-general in the Crimea, and they were struck off the strength of the army. The names and regiments of 28 others remained unknown.

I have carefully compared the statistics from six different official sources, and none of them agree.

It is possible that, in some of these cases, the numbers of deaths may be the numbers occurring in the several months, in other cases the numbers recorded in those months. At the same time, the great discrepancies in the several numbers shake confidence in their accuracy, and render it difficult to make any use of them for statistical purposes.

From details given in Note B. annexed, it will be seen (1.) that there are three different returns of the deaths on board the transports from Balaklava to Scutari, and that the number reported is different in each separate return. Nay, there is scarcely a single ship for which the returns agree.

2. The adjutant's head-roll of burials, the most trustworthy record of deaths, exceeded in six months by upwards of 500 the number reported as having died in the hospitals. And the adjutant states that this list of burials does not include civilians.

3. The director-general himself represents the very numbers in the "return of total sick *treated in Lord Raglan's army*"* as having been *treated at Scutari* alone in November, December 1854, and January 1855.

* Appendix, Third Report, Committee before Sebastopol, p. 470; Second Report, p. 705.

4. The returns of dead at Scutari from October 1 to December 31, 1854, vary as follows :—

Adjutant's return of burials.	Reported deaths.	Principal Medical Officer's return.	Crimean return (infantry alone).
1,301	1,046	910	795*

Smyrna hospital did not then exist. And Koulali did not exist till December, and contained then, as a maximum, but 240 patients.

These sources of discrepancy are therefore eliminated.

The result of my examination of these statistics is simply this, that however satisfactory they may be to the departments who have put them forth, and whichever of them may be correct, exhibiting as they do such palpable diversity, still, to any one not in the secret as to how things which apparently differ so widely are nevertheless identically the same, they convey no trustworthy idea as to the sickness and mortality of the army in the East, and that, for any practical purpose, they are as put forth to the public who are most interested in the matter not absolute truths, but only approximations.

The calculations which I give, I believe, understate the mortality actually experienced.

10,019. How were discipline and obedience to medical and hospital orders enforced among the patients and orderlies of the hospitals in the East?

In the sense in which discipline is understood in the army, *i.e.* of teaching or learning how intelligently to obey orders (which we saw carried to the highest perfection in the Crimea), there was little or none in the hospitals.

It is not meant by this that the men made a "shindy" whenever they were left alone, or that they did not stand at attention when the medical officers went into the ward. There was, in fact, a little too much of this. It is meant that hospital discipline consists in enforcing hospital treatment, and hospital treatment consists in the administration of medicine, of diet, the application of the minor dressings, the cleanliness of the ward, that of the patient, his bedding, and his utensils, his personal obedience to the surgeon's orders as to keeping his ward, his bed, or his position, &c., &c. To enforce in all these matters obedience to the surgeon's orders is to enforce hospital discipline.

Another branch of discipline consists, no doubt, in the man's respectful demeanour to his officers, in the accuracy of diet rolls, returns, accounts, &c., &c. This is not here spoken of, because it is not strictly hospital work. In hospital work, the meaning of the words to be "in charge" is, we presume, to receive the medical officer's orders, to see them obeyed, and to take measures so that they cannot be disobeyed without its being known and remedied.

Now, in military hospitals, there is no one *thus* "in charge."

The ward-master or hospital-serjeant has duties so multifarious that three men could not perform them all with any satisfaction, and the nursing work is generally sacrificed to the writing work, unless the ward-master be, as sometimes, but rarely, happens, a very good nurse.

The orderlies do not bring "skilled labour" to the work, and the medical staff corps far less. There is little or no training ; it is a truism that less work is done less well in the same time by unskilled than by skilled labour.

The cleaning and airing of the wards in the morning would make a housemaid laugh ; at Scutari each orderly worked at it in his own way, and then the patients undid it all, and it had all to be done over again.

Except when the medicines were given by the medical officers themselves or by the women, they were taken by the patient or not, at his own discretion.

The meals were at first irregular, and throughout the patients scrambled for them. It occurred frequently that the bad cases, when unable to feed themselves, were not fed at all, except by the women ; that a great mess of cold arrowroot and wine stood by the bedside the whole day, till it was thrown away ; that the poultices were put on cold, or left on till they were hard, and then not washed off ; that the bed-sores were unattended to till they had become so bad that the medical officers' attention was called to them ; that the patients were left dirty unless they asked to be washed; that the utensils were never emptied more than once a day ; that the keeping certain very bad cases constantly dry and clean was almost wholly

* The deaths of the cavalry, artillery, and engineers, averaged together about one-ninth of those of the infantry at Scutari, according to the Adjutant-General's return for seven months, viz., October 1, 1854 to April 30, 1855. This would not have equalized the numbers for 9)795(88, 795 + 88 = 883.

unattended to; that the patients ordered to remain in bed were as often out of bed, or even out of the ward, or smoking in the privies when these were cleansed and ventilated. The position of surgical cases in bed was generally not attended to.

Many orderly medical officers were so zealous in their duties that they would drudge through all these details, and see them carried out themselves; but this is not discipline, nor can it be, unless the medical officer were in his ward through the whole 24 hours.

If these things are denied, I say I speak from personal experience, and, with regard also to the military hospitals at home, I have seen and heard of the same things there.

It would be easy for me, in all these assertions, to cite the particular instances, but I am not disposed to bring upon individuals censure for defects which I believe to be inherent in the system.

The medical staff corps are, for the most part, nothing but sweeps and ration-carriers. There are some first-rate subjects among them, but the endowments of most of them were first-rate ignorance of the details of nursing.

If all the nurses were turned out of civil hospitals and men engaged promiscuously, without character, to do their work, we should see the same results.

10,020. How were the inspections conducted, as far as they concerned hospital order?

The medical inspections, as far as I saw them, with some very brilliant exceptions, regarded only hospital order, and were conducted with little reference to the state of the patients.

I will describe the state of the general hospital at Balaklava when I came into it, April 11, 1856, a time when there was by no means any pressure.

The first night I found from 10 to 20 of an Irish regiment talking and drinking in the extra diet kitchen.

A quantity of extra bedding and clothes were cumbering the wards, instead of being in store.

Under the beds and under the mattresses were the patients' private clothes, large boxes, carpenters' tools, wood, coals, dusters, brooms, stones used in cleaning the wards, boots, shoes, and slippers. These things were concealed by the bedclothes.

One patient, suffering from frost-bite, who subsequently died, had not been moved for a week. Being unable to leave his bed, and having been neglected, he was found in a state indescribably horrible.

The excellent second-class staff surgeon who came on duty the same day I did, immediately set to work to introduce real order and cleanliness. On April 14 the principal medical officer of the army visited the hospital without requiring this staff surgeon, who was in charge, to accompany him; and, on the subsequent day the principal medical officer censured this officer for "the state of dirt and disorder," which was the removal of "dirt and disorder," in which he had "found the whole establishment."

In that hospital, when going over at night the whole of the wards, of which seven were in the building, and fourteen were huts, I have not found a single orderly perfectly sober who was sitting up in the huts, and one or two in the building not sober either. This was the medical staff corps.

10,021. Can you state why the homes of the poor in the country are kept comparatively clean and healthy, on very moderate means?

I think that the woman is superior in skill to the man in all points of sanitary domestic economy, and more particularly in cleanliness and tidiness. I think great sanitary civil reformers will always tell us that they look to the woman to carry out practically their sanitary reforms. She has a superior aptitude in *nursing* the well quite as much as in nursing the sick. At the same time, I am bound to say that nothing can be more perfect, at least to outward appearance, than the cleanliness of a ship. But the sailor is a race *à part*.

10,022. Is it the peculiar skill and industry of the English labourer's wife to which this is referable in the one case, and to the incompetency of men on the other to conduct the domestic economy of a home or an hospital?

I think so. I think the Anglo-Saxon would be very sorry to turn women out of his own house, or out of civil hospitals, hotels, institutions of all kinds, and substitute men-housekeepers and men-matrons. The contrast between even naval hospitals, where there are female nurses, and military hospitals, where there are none, is most striking in point of order and cleanliness.*

10,023. Are there not matrons in all the best civil hospitals?

In all that I am acquainted with.

* I should perhaps state that there is a great difference, generally speaking, among the women of Great Britain and Ireland in this respect.

I would put the Anglo-Saxon race in the southern and north-western counties first in point of domestic management; far below these come the Danish race in the eastern counties and the mixed race in the manufacturing counties, and last, the Irish and Highland Celt.

Hospital Construction.

10,024. Will you state to the Commission what you consider to be the best plan of hospital construction, for fulfilling the requisites of good sanitary condition and facility of administration, with your reasons for preferring any plan or plans to others?

The best principle of hospital construction is that of separate pavilions, placed side by side, or in line. The former is preferable. It diminishes the distance to traverse from block to block.

The distance between the blocks should be not less than double the height.

There should not be more than two flats to the block, nor more than one ward to each flat.

There is, however, no objection to having 70 to 80 sick under one roof, if, for the sake of economy, it be necessary to build each pavilion with three flats instead of two, although two flats are more convenient for administration.

For the purposes of administration, the building ought to be in a square ; the basement story connected all round by an arched corridor, with an open terrace above.

The whole hospital should be erected upon an arched basement.

A hospital formed of separate pavilions could be built in line, provided large, roomy, well-ventilated, and well-lighted staircases intervened between each two pavilions.

This is the plan of the new military hospital at Vincennes, which, however, forms three sides of a square.

This principle would have been illustrated in Netley, had it been made so thin as only to have admitted two rows of beds between the windows, in the breadth of the ward, had there been no corridors, and had the pavilions been separated by staircases. It would then have been perfectly healthy ; but administration would have been very difficult in so long a line.

As it is, there are to be two complete and different administrations, with two kitchens, two sets of offices complete ; it is the most expensive and least *administrable* form.

There is only one kitchen to Vincennes.

That not more than 100 patients can with safety and facility of administration be massed under one roof, has come to be an acknowledged principle of hospital construction.

Buildings of two flats are most compatible with perfect sanitary conditions and facility of administration. Even in emigrant ships the occupation is limited now to one deck.

10,025. Will you state what you consider the number of sick which a ward should contain, for health, discipline, and administration, with your reasons for preferring one number to another ?

The best size of wards for ensuring the two conditions of health and facility of discipline, is from 20 to 25 sick.

Wards smaller than these are more difficult to ventilate by natural means alone. A certain amount of space is requisite for diffusion, in order to secure perfect natural ventilation.

The mode of construction in hospitals is, it is presumed, to be determined by that which is best for the recovery of the sick. If any other consideration is taken, such or such a percentage of mortality is to be sacrificed to that other consideration.

But it so happens that the safest for the sick is the most economical mode of construction.

Take the example of Portsmouth hospital, or Netley, where the windows are at each end of the ward. There should not properly be more than four beds in each of those wards. For it is undesirable ever to allow more than two beds between each two windows ; otherwise, when the windows are opened, the effluvia blow over all the intervening row of beds before escaping.

Wards of a smaller size than those indicated above, viz., of 20—25, are decidedly objectionable, because unfavourable to discipline, inasmuch as a small number of men, when placed together in the same ward, more readily associate together for any breach of discipline than a larger number.

It has been proved by experience that the presence of female nurses in large wards renders discipline extremely easy, and that a sufficient number of female nurses cannot be allotted in smaller wards.

In the event of a death taking place in the ward, the survivors, when they are few in number, are far more likely to be affected by it than a larger number.

It is very desirable, for the purposes of discipline, that men of the same regiment should not be placed together in the same small wards of general hospitals.

Discipline.—There needs only a comparison between the discipline of civil and military hospitals to substantiate the above assertions. If discipline mean the enforcing obedience to orders by teaching how they are to be obeyed, there is little or none in a military hospital.

In the administration of food, of medicine, in the cleanliness of the patient's person, bedding, and utensils, in the patient's personal obedience to medical orders, as to rising or

remaining in bed—all of these being matters about which there is no question or demur in a civil hospital, the discipline in a military hospital is far inferior.

How can it be otherwise? Unless the medical officer is converted into nurse, cook, and house-maid, he cannot see to all these things. The ward-master or hospital-serjeant is necessarily absent from his ward a great deal, on account of returns and accounts. The orderly cannot enforce obedience. There is no one *in charge* to enforce the medical orders, *i.e.*, without whose knowledge no disobedience can take place, as there is in a civil hospital, where one "ward sister" is daily seen in absolute control of 30–40 men, as far as obtaining absolute obedience to medical orders goes; there is no rebellion, tacit or open. This is the answer if it be asked how then was there not discipline in wards of 20–40 patients during the war.

Two other considerations are involved in that of the size of wards, economy and clinical instruction.

It may be asked, why should not all the sick be placed in one ward, provided there be cubic space enough? The answer is, with from 20–25 sick a height of 15–16 feet is enough, but it would not be enough for more, and height always involves expense.

The greatest economy and the greatest safety to patients is in the above number.

Also, without the most perfect ventilation, there is always more danger of effluvia being driven by a draught till it accumulates in one part of a very large ward, as was the case in the long corridors of Scutari.

Wards of a moderate size, like those indicated, are better for the purposes of ventilation than wards half the size; and are less subject to a hospital atmosphere than wards of double the size. But a ward of this latter size may be rendered perfectly healthy by having a height in proportion to its width.

Where clinical instruction is intended, to admit even a class of six students into a ward of 12 sick, is increasing the population in the cubic space by one half. There is more than twice the room proportionally for students, in a ward of double the size. On the other hand, if the number of students be very large, a ward of from 20 to 25 patients, it must be at once admitted, is too small. The ward must be increased, and with it its height and its cubic space; for, be it remembered, the whole of the proportions of the ward, not only its length, must increase with its number of beds; for, if the ward be very long, in proportion to its height and breadth, it becomes not a ward but a corridor, and all corridors are objectionable for sick, because it is impossible to ventilate them safely; because, in admitting air, the effluvia may be driven from one end and be accumulated at the opposite end faster than it can be taken out. The right proportion is a fixed one. But in a ward for 40 patients, 20 bad cases will be disturbed while 20 slight cases are being examined. If 20 sick only be put in each ward, the slight cases may be put together.

10,026. What amount of cubic space should be allotted for each bed?

The cubic space for each patient has been fixed by European sanitary science at not less than 1,500 feet.

A good proportion for a ward of 20 patients would be 80 feet long, 25 feet wide, and 16 feet high. This would give 1,600 cubic feet to each bed. It would give 13 feet between foot and foot, which is not too much where there is a clinical school. It would give an average of 16 feet to each 2 beds in width.

Half the sick are supposed to be on each side the ward.

10,027. What is the best proportion of windows to beds, and what ought to be the relative position of windows and beds, with your reasons for preferring one arrangement to another?

One window should be allotted for every two beds; the window to be not less than 4 feet 8 inches wide, within 2 or 3 feet of the floor, so that the patient can see out, and up to the ceiling.

The pair of beds between the windows to be not less than 3 feet apart. With a very bad fever case, I would leave the other bed empty, for the sake of isolating the patient. Miasma may be said, roughly speaking, to diminish as the square of the distance. With good ventilation, it is not found to extend much beyond 3 feet from the patient; although miasma from the excretions may extend a considerably greater distance.

Windows are to be placed opposite each other, and to be either double or filled with plate glass; the former is preferable, as it affords the opportunity of indirect ventilation in all weather. Wire-gauze across the open part of the window would afford an extent of surface for ventilation not otherwise to be obtained, and preclude all possibility of draught upon the patient.

Windows opening as at Middlesex and Guy's Hospital, in three or more parts, with an iron casting outside, to prevent a delirious patient from throwing himself out, are the best form of plate-glass window.

No part of the ward ought to be dark. This is of the utmost importance, in many cases. The light can always be modified for individual patients. But even for such patients to have light in the ward is not the less important.

There are three reasons for this multiplicity of windows:—

1. Light.
2. Ventilation.
3. To enable patients to read in bed.

The necessity of light is established by all scientific inquiry and experience. The proportion of windows to cubic space is of the first importance to health. It has been lost sight of in English architecture, owing to the unfortunate window-tax, which has left its legacy in giving us a far smaller proportion of light than in French houses. In huts, the proportion of window space to cubic space is far greater than in buildings. One main cause of the unhealthiness of large numbers of men congregated in one large building, even with sufficient cubic space, is the disproportionately small window space. In the huts in the Crimea, during the last 22 weeks of our occupation, the mortality of the whole army was only two-thirds of what it is in England.

For the same purpose of ensuring a sufficiency of light, the walls should always be white, excepting perhaps for ophthalmic wards.

10,028. What is the best material for the internal walls and ceilings of wards?

Impervious walls are of the first importance for hospitals. These walls should be of Parian or other similar cement, or glazed tiles. Brick, used at Portsmouth hospital, is highly objectionable from its porous character. Plaster is objectionable from the same circumstance, it absorbs organic matter. Both require very frequent lime-washing to keep them healthy.

10,029. What is the best material for the flooring of wards, and your reasons for preferring one material to another?

The materials used for floors may be oak wood, pine wood, composition, and tiles.

Oak wood, well seasoned, is the best. No sawdust or other organic matter capable of rotting should be placed underneath the floor. Concrete, or some similar indestructible substance, would be the best for the purpose.

The reason for using oak wood is, that it is capable of absorbing but a very small quantity of water. And it is very desirable to diminish even that capability, by saturating it with beeswax and turpentine. Beeswax is an inalterable substance. It is also desirable to avoid the necessity of washing the floor as much as possible.

The joints of the flooring must be fitted well together, and cemented with marine glue, or any other impervious substance. The object is, of course, to prevent any water from entering the floor.

Impervious, non-absorbent cement or composition would make a capital floor, used as it is in Italian houses. But, on account of its great conducting power, it would be necessary to furnish each patient with a pair of list shoes, and a small bedside carpet.

The stairs and landings should be of stone. The corridors should be floored with diamond-shaped flags or tiles, which stand better than those laid in the usual manner. The terrace might be either covered with asphalte or glazed tile.

10,030. What accommodation for nurses, extra diets, clothing, and clean linen should be attached to the wards?

There should be a nurses' room, clothes room, a small diet kitchen, and also a store closet attached to each ward.

It is perhaps hardly necessary to add that there should be a few small wards for operation cases, and for noisy fever cases.

10,031. What kind of baths should be attached to the hospital?

The baths should be separated from the pavilions, but connected by the corridor.

The walls and ceilings should be of Parian cement, or some similar material, the floors of tile. They should be suitably ventilated and warmed. They should contain hot and cold water baths, sulphureous water, hot air, medicated and vapour baths, shower baths, and douche. There should be a portable bath to each ward.

10,032. What is the best form of hospital kitchen?

The kitchen should be placed away from the wards. Its walls and ceiling should be of Parian cement, for plaster has a tendency to fall off, from the vapour and effluvia of the kitchen.

The cooking apparatus, boilers, &c., if placed in the centre of the kitchen, instead of against the walls, will afford twice the amount of fire space.

In the Paris kitchens there is a brick erection in the middle of the floor, with iron doors and brass mountings, coppers with covers, places for baking and for roasting, &c.

The dressers are against the walls.

The floors are flagged with square flags.

This appears to be the most convenient mode of erection.

10,033. What is the best form of laundry for a hospital?

The excellent new washing, drying, and wringing machines lately invented are so numerous that it would take too long to enumerate them. On the whole the laundry at the Wellington Barracks, which also washes for all the Guards' hospitals and barracks, and the new laundry at Haslar naval hospital, are the best I have seen. But every day brings in fresh inventions, and a reformer is always adopting the good ones.

It is a further question in army matters, whether you should train a body of men to do as much as possible by hand, so as to be serviceable in the field, where machines cannot be had, or whether you should make use of all the inventions for saving labour which are now so good, and daily improving. Probably both must be done.

10,034. How should nurses and orderlies be accommodated?

If orderlies are to sleep among their patients, the per-centage of mortality will be of course raised among them. This was the case at Scutari, where it was very high, though it will never be known how high. Statistics are, however, not necessary to establish such an obvious fact. The orderlies should sleep at a distance from the wards, and not take their meals in them.

With regard to the female nurses, there is the further question as to what class of nurses should be employed in military hospitals. My own opinion is humbly but entirely against employing any but women of the efficiency, responsibility, and character of head nurses in civil hospitals. For such a nurse a small airy room off her ward, but so that she can always have it under command, is the best for her efficiency, and need not be injurious to her health.

Unless, however, there are facile means of access to another nurse's room, in case of illness, there must be only a day room for each head nurse adjacent to her ward. She must sleep at a distance from her ward, but contiguous to the other nurses. If assistant female nurses are employed, it must be considered that association in large dormitories tends to corrupt the good and make the bad worse. And separate accommodation, or accommodation for two or three together, should be provided contiguous to the ward, if possible—if not, to one another.

10,035. What kind of bedstead and bedding is the best?

No bedding but the hair mattress has yet been discovered that is fit for hospitals. Hair is indestructible. It does not readily retain miasma. And, if it does, heat easily disinfects it. It may be washed. It is not hard to the patient. It saves the objectionable use of a blanket UNDER the patient.

Straw paillasses are absolutely objectionable. They are cold; and, in some cases, the abstraction of heat from the spine lowers the patient's vital energy to a degree which does not leave him a chance. I am of opinion that the loss of life must have been great during the war from laying our patients on paillasses, which were either placed on wooden divans, or on the flagged corridors, with only a mat between.

The bedstead should be iron; and there are great differences in the way the sacking is put in. There should always be a shelf at the head. The French have one at the feet too.

The naval and civil hospitals have all kinds of dropsy and surgical bedsteads for raising a patient when he cannot be moved, for inclining him at a certain angle, &c., also water and air beds. There is no reason but a general objection to comfort to prevent us using these bedsteads in military hospitals.

10,036. What ward furniture should you recommend?

Oak furniture decidedly. White window curtains are used in some French hospitals, not to exclude the light, but to look cheerful. They are desirable, but not necessary.

The less ward furniture, speaking generally, there is the better. But if it be desired by the Commission, I will put it in a list of what is absolutely necessary. Hitherto, as is well known, a military patient has been expected almost to furnish his own ward.

10,037. Do you wish to say anything about water supply or drainage?

The water must either be drawn from a tank at a distance from the hospital, or from a main under pressure; but never from a cistern within the hospital.

The fault of the water supply in Parisian hospitals is, that the water is either carried up by "porteurs d'eau," or pumped up and remains standing.

There is no question that this is wrong.

There should be convenient means in or close to the wards for obtaining pure drinking water for the sick.

No drain should ever pass under a hospital; all sinks, water-closets, lavatories, and baths, should be so placed that the drainage should be conveyed directly away, without passing under any part of the hospital.

All drains or pipes for the purpose of conveying away water from any part of the hospital should be carefully trapped between the outer wall of the building and the sewer; and all drains should be ventilated.

10,038. What is the best position for the water-closets and lavatories, with regard to the wards?

The water-closets should be placed at the end of the ward, opposite the entrance, and separated by a lighted and ventilated lobby. There should be a small bath room for bed-ridden patients, and lavatory adjoining, but, of course, separate. The water-closets should be of the best construction, self-acting.

10,039. What do you consider the best system of ventilation for a hospital, and why?

The doors, windows, and fire-places should be the means of ventilation for such wards as these; nothing else is wanted. If a hospital must be ventilated artificially it betrays a defect of original construction which no artificial ventilation can compensate; it is an expensive and inefficient means of doing that which can be done cheaply and efficiently by constructing your building so as to admit the open air around.

But there are buildings of original defective construction which it is undoubtedly necessary to ventilate artificially. And in countries where fuel is dear and cold severe, the problem complicates itself, because it is a less consumption of fuel to warm the fresh air as you admit it.

In the case supposed, warming is a necessary part of ventilation, and heating the air required heats the wards, without extra cost of fire-places, which always burn many times the quantity of fuel expended for warming.

In England, where fuel is cheap, there can be no such excuse.

If attendants cannot be trained to keep the rooms ventilated without draughts, there is a defect of intelligence, and attendance on the sick is not their calling.

Occasionally, ventilating shafts carried up from the ceiling of the ward to the roof will be found an advantageous means of renewing the air.

There should be one or more open fire-places in the ward, but lofty, so that the throat of the chimney shall be above the patient's head and bed.

We look upon the chimney as the best ventilating shaft; and one disadvantage of artificial ventilation is, that you must then supply the fire with its own consumption of air by a shaft to itself. Or it will take the air from the artificial ventilation and cause it to cease to act. Whereas with natural ventilation the fire sets it acting, takes the air from the room, and is the most valuable means of ventilation.

Our grandfathers' lofty fire-places are the greatest loss in modern house architecture. The little low fire-places of this date bring the best current of air below the stratum in which we are breathing. With our system, to breathe the best air, we must not be more than six years old, or we must lie down.

10,040. What do you consider the best system of warming for a hospital, and why?

Radiation; open fire-places. Heated air from metal surfaces should never be used for warming. It has a tendency to produce disease of the lungs. The hot-house system of warming with a brick floor and brick flues is perfectly safe; but an earthenware floor in hospitals, unless glazed, is inadmissible, because of the great absorption of water.

In a ward of the size mentioned, 80 ft. by 25, two fire-places would probably be necessary.

10,041. Do you advise the establishment of additional general hospitals?

Yes; at Malta, Corfu, Gibraltar, London, Portsmouth, Aldershot, and perhaps at Shorncliffe and Fermoy, there are sufficient bodies of troops for general hospitals to be formed; and it would be most desirable for the interests of science, economy, and administration to establish on stations where larger numbers of troops than one regiment are collected, at home and abroad, permanent divisional or brigade hospitals, together with a permanent administrative staff of officers and subordinates, for the treatment of the sick of the station and of detachments within reasonable distance.

The efficient hospital staff, trained under such an organization, would supply regiments going on foreign service.

The medical staff would consist permanently of an inspector and deputy-inspector, the rest of the staff would not be permanent, because regiments change on the station. The complement of a regiment is one surgeon and two or even three assistant surgeons. One of these would be appointed to serve on the staff of the general hospital, one would remain with the regiment as sanitary officer, and the third might be set free on leave to go to some military general hospital for the purpose of study, for, say that there were five regiments, five surgeons would easily do the duty for the sick in a general hospital, where now, in regimental hospitals, it is the business of fifteen.

10,042. Do you prefer general hospitals to agglomerated regimental hospitals, and why ?

The system of agglomerated regimental hospitals is no system at all, if it means merely assigning one or more wards in the same building to each regimental hospital, with the same kitchen to all, so that if there are ten hospitals, there may be ten surgeries, there are ten hospital serjeants, ten staffs of medical officers, ten of everything, while in one hospital there may be two severe cases, in another twenty.

The only theory of a general hospital which we heard during the late war was that of making it as much like a congeries of regimental hospitals as possible; and, though this theory neither was nor could be systematically carried out into practice, it remained and does still remain the theory, and prevents, as it then prevented, any attempt to devise a better and more practicable scheme. For,

1. The surgeon cannot be relieved of his multifarious non-professional duties.
2. No comparison of different treatments, with a view to the furtherance of science or the advancement of individual knowledge, can be made, while in the military medical service the organization remains exclusively regimental.

Without actual experience, indeed, it is evident that to divide a small number of sick into half a dozen hospitals, which have all to be kept up as complete and separate establishments, instead of uniting them into one, necessarily involves considerable waste of labour and expense.

It is contrary to every analogy in England. What should we say if every parish in Middlesex insisted upon sending its own lunatics under their own surgeon to be separately lodged in Hanwell Asylum ? We should say no improvement in science, classification, or administration is here possible.

10,043. In what particulars is improvement impossible under the present exclusive system of regimental hospitals ?

1. The management and internal economy of hospitals, cooking, washing, supply and issue of extras, &c.
2. The financial part of the service.
3. The professional and economical superintendence.
4. The organization and superintendence of the attendance department.
5. The supply and dispensing of medicines and medical appliances.
6. The introduction of proper baths, lavatories, &c.
7. The classification and treatment of particular diseases.
8. The imperatively needed organization of hospitals for soldiers' wives and children when sick, the want of which is most demoralizing.
9. The arrangements for the treatment of sick prisoners and others not belonging to regiments on the station.

In large permanent establishments only can these things be properly regulated.

10,044. How does this system affect the army medical officers ?

The standard of professional service can never be raised among army medical officers under the regimental system.

For to do this, three things are necessary :—

1. Sufficient professional occupation.
2. Command over large numbers of cases of the same affections.
3. Opportunity for comparing results of different modes of treatment.

10,045. In what other ways does the existing system obstruct the progress and diffusion of medical science ?

Under the present system,

1. No practice can ever be established as the best ; the sick being treated in so many hundred hospitals by as many hundred surgeons.
2. No system of mutual information and clinical instruction can be established. Individual experience remains individual property, or is buried in offical reports.
3. No professional specialties can be acquired. For there is no opportunity of collecting the necessary material for study, practice, and experiment in special diseases. Nor is the experience of one man shared by others.
4. No publicity can be introduced, bringing individuals and establishments into competition with their rivals in civil life and other armies.
5. No prizes, distinctions, or promotion for scientific and professional labours can be systematically introduced.

10,046. What are the principal objections to the regimental hospital or agglomeration of regimental hospitals ?

1. The impossibility of professional progress.
2. The impossibility of any organization of government.
3. The impossibility of any organization of attendance.

The agglomeration of the regimental hospitals does not modify these evils any further than what was actually done in the Crimea, where the hospital huts of each regiment were placed as near as possible.

As to 2. and 3., the management and government of the regimental hospital are now entirely vested in the medical officer and hospital serjeant, under the military authorities.

10,047. Can advantage be taken of the division of labour ?

It is easy to see that no division of labour is possible.

The duties of the hospital serjeant, by regulation, are so multifarious that it amounts to a physical impossibility for one man, however active and intelligent, to perform them all.

He is Ward Master ;
Serjeant ;
Steward ;
Head Nurse ;
sometimes Dispenser ;
sometimes Purveyor's Clerk.

The consequence is that there is no nursing, and no hospital discipline, in the sense in which these things are understood in a civil hospital.

Again, the regimental system was shown to be in the Crimea utterly incapable of meeting the requirements of an army in the field under the circumstances, and yet we might never again be in circumstances in the field so favourable to the formation of regimental hospitals.

When the general hospitals came to be formed, there were but two or three medical officers who had any idea of organizing a system for 1,000 to 2,500 sick.

10,048. What reasons are usually alleged in favour of the regimental hospitals ?

1. That the regimental surgeon knows all his men ; and
2. That the sick soldier does not like to be separated from his regiment.

10,049. Are these reasons valid ?

No ; only partially. 1. The fact of the frequent changes of the regimental surgeon, especially in time of war, is overlooked. Even promotion takes him away from his regiment. The hospital serjeant is frequently the only permanent officer. He sometimes knows all his men ; but often the surgeon does not.

2. As far as I have seen, nothing but evil comes of comrades lying together sick. They are depressed by each others sufferings or death. They are led to combine against hospital discipline. I incline to think that the task of governing a number of men in a civil hospital, who have never been under any discipline at all, and are there merely as casual inmates, is considerably facilitated by their being strangers to one another.

10,050. Is the regimental hospital system a preparation for organizing a general hospital in time of war? And is it safe to depend upon an exclusively regimental system, when, in all emergencies, the general hospitals are what we must depend upon ?

The primary necessity of management in institutions containing, say, 1,000 persons, is the reduction of departments to their smallest possible number, and the definition of their functions.

This has not even been attempted. The nine departments of our war general hospitals have been described. Before a patient could eat his dinner in the Scutari general hospitals, it had to be manufactured through the medium of the commandant who assigned the orderlies and cook, of the engineers' department who repaired the kitchen, of the purveyor who supplied a portion of the food ; of the commissary who, through the contractor, supplied bread, meat, and fuel ; and of the soldier himself, who supplied, out of his own kit, some of the utensils for eating and drinking.

A question of hospital repairs has been known to pass from the medical officer to the purveyor, thence to the principal medical officer, back to the purveyor, thence to the quarter-master general's department, commandant, engineers' department, and was ultimately decided upon without appeal to the informing judgment, viz., the surgeon in charge, who saw his patient suffering from (say) a leaky roof or broken pane of glass, without the means of redress.

It is hardly necessary to state that it is not safe to depend on any system which leads to such results.

10,051. What has been your experience of the working of the present system of written requisitions, checks, and counter-checks ?

This system of checks and counter-checks seems to have been invented for the purpose of saving money instead of for that of saving the lives of the sick. Now it fails in its object both ways, because the lives of men are of more money value to the country than any saving can ever by any possibility be in such matters ; and also because it actually wastes money for the clerk system and check system require such a staff as to cost far more than the additional supplies would do.

No system can be more expensive than ours, for these reasons.

It is also inconsistent with prompt and efficient action, and consequently hazardous to the sick.

10,052. Can you suggest any simpler and more efficient arrangement ?

A governor, who should be responsible for everything; a principal medical officer ; a steward, who should supply everything, like the agent in the naval hospitals ; a superintendent of hospital

attendants, who should overlook the whole attendance department; a treasurer; and a sanitary officer attached to the governor, —what more do we want? We must have regimental hospitals also. It is not meant to do away with a necessary, at all events, and, in some respects, an admirable system. But a medical officer must be conversant with both, otherwise, as surely as we again have war, shall we again break down in our general hospitals.

10,053. Has experience established the necessity of general hospitals?

Yes.

It does not appear necessary to discuss whether there ought or ought not to be general hospitals, because there must be general hospitals. If they are an evil, let the evil be made as light as possible by good organization; if they are good, let them be made as good as possible.

But, in what war have our general hospitals not been a signal failure? In the early part of George II.'s reign, at Coimbra, and, most fatal example of all, in the late war.

10,054. If this has been the case, and if this always will be the case, reasoning from the past, is it not advisable at least to go into the question of constituting a scheme of government for general hospitals?

Certainly.

General hospitals, at the base of operations, when this is at a distance from the army, must necessarily fall through, between the two authorities, the commander of the forces engaged in active operations, and the departments at home, unless there is a governing head with commensurate responsibility on the spot.

If it is said that the general officer commanding in the district is the governing power, it is obvious that the commander of the forces will give the man least wanted and least efficient in the front for this purpose; whereas, if a governor for the hospital itself were appointed from home for his known powers in administration, the man most efficient might be sent.

10,055. Ought not the principal medical officer to be the governor?

Not if it can be avoided. It is obvious that the real object and glory of the medical profession are medical skill and practice; and, if a good medical officer be put to do something else, his services are lost in that which he has spent his life to acquire.

But experience is the true test, and if the experience of the failure of the Scutari hospitals will not teach us at least to discuss the question, no argument stronger can be used.

10,056. How should the general hospital be governed and organized?

An executive head, who is there on the spot to answer for failure whose business it is without any question to govern this institution and nothing else, with power corresponding to the responsibility, which is his, and no one's else, this is what we seek in all similar known institutions. He ought to have full power to obtain

Labour,
Transport,
Supplies.

Labour he must have power to hire, when not obtainable from the military train, also transport, as far as land is concerned, when not obtainable from the land transport corps; the sea transport he must have from the admiral on the station. Supplies he must have power to obtain without reference to the commissariat, who are not responsible.

Whether his steward is to be a commissariat officer, detached for the purpose, or an officer from a different service, it is not my province to discuss.

But it cannot be disputed that the articles of supply for a hospital are different from those for an army. The French take a different bread for their hospitals. We are allowed to give 1*d.* per lb. more for our hospital meat.

It cannot be disputed that it is better to let the responsibility for all supplies rest upon one person than upon two.

10,057. What is the difference between a civil hospital and an agglomeration of regimental hospitals?

The former has one treasurer, who administers the finance of all the wards. It has one committee, who manages the supply of all the wards. It has one secretary, who manages the correspondence for all the wards. It has one house governor or superintendent for all the wards; one kitchen which cooks for all the wards; one laundry which washes for all the wards; one surgery; one apothecary; one pharmacy and laboratory for all the wards; one set of attendants, under one head; one set of accounts; one system of supply. It has one set of officers; one operating theatre; one dissecting room.

There is not a bad case in the hospital which may not have the advantage of the advice of all the best officers in the institution; there is not a surgeon or physician who may not be called into consultation by all the rest. I have never known an instance where the interests of a patient were sacrificed to the interests of an individual officer. So strong is the

professional spirit in civil medical life that the experience of each man becomes the common property of all the rest.

I have recently heard it stated, for the first time, that each civil surgeon is situated as regards his ward precisely as a regimental surgeon is in his hospital. I am bound to record, as strongly as I can, that the reverse has been my experience in a great variety of instances.

10,058. What peculiar advantages would the patient enjoy in general hospitals well organized?

In general hospitals, there can or ought to be no difficulty in obtaining all that is necessary for the patient. In all regimental hospitals, it is impossible for the regimental surgeon to obtain all that he wants for his patients; unless there is such a staff for each regimental hospital of 50 patients, as there is, or ought to be, for a general hospital of 500; which is manifestly impossible.

10,059. What is the real objection to general hospitals in the minds of army medical officers?

A most legitimate and unanswerable one under the present system.

A regimental surgeon is master, as he ought to be, of his own practice in his regimental hospital. The practising surgeon in the general hospital practically is not. Both are subject to inspection, but practically the difference is great.

With the slightest knowledge of human nature, with the commonest sense, it is obvious that the inspections, as now conducted in general hospitals, the system of superintendence and subordination of scientific acquirement to rank, must destroy in a man his sense of responsibility, and (the most important quality, the latest acquired, in a man of action, which a medical man must be) his self-reliance.

Therefore, do surgeons under the present regime most reasonably and justly prefer being regimental surgeons.

10,060. What are the legitimate objects of inspections?

Inspections ought to be merely for the purpose of collecting facts, with the view of enabling the authorities to act upon them.

Your whole purpose in educating and examining the medical officer is to fit him for medical practice. If he is not fit to practise, he is not fit to be a medical officer; and yet, you would subject him to weekly interference in his practice and in petty details much better left to himself.

The only rationale of superintendence is, when it comes from a superintendent better qualified than the superintended, which the treating surgeon, in the army medical department, does not feel to be the case in most instances. For the superintendent has, in most instances, ceased to practise.

10,061. Are any peculiar views of their proper sphere of action entertained by any section of army medical officers?

There is a portion of the army medical department who like to keep the housekeeping and book-keeping in their own hands. This is a very small portion. But they do not consider how impossible it is to raise the true dignity of the department, to attract the best men into it, as long as this is the case.

To make high-priced labour do what low-priced labour can do, to make men at 7*s.* 6*d.* a day do what men at 1*s.* 6*d.* a day could just as well perform, is the true way to degrade a scientific department.

And I do not see how it is possible, without the organization of large permanent establishments, in which alone a proper administrative staff could be trained, to make the army surgeon other than a sort of maid of all-work.

10,062. Are the confidential reports attended with any evil consequences

The evil inflicted by them is not so much the injury to individuals, severely as this is sometimes felt, as the lowering of the whole moral tone of the department, the danger of depriving a man of his conscientiousness, his sense of responsibility, his true dignity. For army medical men are like all other medical men. And such interference with their practice and their reputation would be fatal to all. No increase of pay will raise the department while these things are suffered to exist.

10,063. What is the best class of men to be recruited for the medical staff corps?

Discharged soldiers or civilians of good character. They should always be men who can read and write.

10,064. In what manner would you propose to have them instructed in their duties?

If they are to nurse, unquestionably they should be instructed in the duties of nursing, as also in those of cleaning, &c., by head female nurses, who understand these things. To the superior ranks, a few simple anatomical lectures might be given by the medical officers. Dispensers must, of course, be suitably educated, if they are to dispense.

10,065. What are the duties of the orderlies attending on the sick?

And what would you propose to be the respective duties and relative position

The administration of food and of medicine, the making of poultices, and application of the minor dressings, should always be in charge of the head nurse. Under her, the cleanliness of the ward, bed, bedding, and utensils of the patients, as well as

of the nurses and orderlies employed in the same wards ?

his personal cleanliness ; the fetching of diets, the warming and ventilation of the wards are to be attended to by the orderlies, but always under the nurse's surveillance. And she is to have the power of reporting disobedience on their part.

10,066. What should be the proportion of or derlies to sick ?

Not less than one to each seven sick, exclusive of the female head-nurse. I am not speaking of convalescents.

10,067. How long would you keep a man on duty in the ward ?

Not more than eight hours. Watches of four hours are good, thus :—

1st	orderly	4 a.m.–12.
2nd	„	8 a.m.–4 p.m., or 6 a.m. to 2.
3rd	„	12–8 p.m.
1st	„	4 p.m.–8 p.m.
2nd		8 p.m.–12
3rd	„	12–4 a.m.

1st orderly sleeps from 8 p.m.–4 a.m., and has from 12–4 p.m. off duty.

2nd orderly sleeps from 12–8 a.m. and has from 4–8 p.m. off duty, or sleeps from 12–6 a.m., and has from 2–8 off duty, of which a part should be spent in rest.

3rd orderly sleeps from 4 a.m.–12, and has from 8 p.m.–12 off duty.

From 8 p.m–6 a.m. there is but one orderly on duty.*

The nurse might be on duty from 7 a.m.–1 p.m ; off duty from 1–5 p.m. ; on duty from 5–11 p.m. ; off duty from 11 p.m.–7 a.m.†

Of course, if she is a trustworthy woman, she will be much in her ward in the intervals, especially if she have bad cases.

10,068. How would you provide for the discipline and regulation of the orderlies ? What duties should you assign to the ward-master ? What proportion of ward-masters to the number of orderlies employed ?

There should be a ward-master for every three or four wards, whose whole business should be to see to the regulation and discipline of the orderlies, and to the enforcing obedience to the orders of the nurse. But it is obvious that if the nurse is not in authority in regard to all that concerns the patient, her duties will become impossible. If she is in authority, the orderlies will willingly obey.

It should therefore be compulsory that she should report a refractory orderly to the ward-master.

The ward-master should be in charge of all returns, accounts, states, diet-rolls, &c., so as to set the nurse completely at liberty to attend to her ward.

10,069. What objection is there to the hospital with a long corridor and small wards ?

The least administrable form of hospital is the long corridor with wards of from eight to ten patients, opening off one side. Attendance, meaning of course due attention to the patients, becomes almost impossible. The above plan contemplates a ward of 21 patients, where one orderly sitting up, each for a watch of four hours during the night, is amply sufficient. But how to provide attendance suitably superintended, especially at night, for wards of eight to ten patients, I confess I do not see.

10,070. How do you propose to obviate the evident danger of collecting a great number of sick men, labouring under diseases of every kind, into one large building where they breathe a common atmosphere ?

The French break up their general hospitals into separate blocks, while we sometimes agglomerate our regimental hospitals into one building, thus *reversing* the sanitary law.

The Lariboisière hospital at Paris has 600 patients under six roofs ; and we had in the Crimea accommodation for 500 or 600 patients at the Castle hospital in from 20 to 30 large and small huts.

One administration, in both cases, for all.

This is the true principle. All that has to be manufactured, as the cooking, washing, &c., should be, as much as possible, concentrated into one ; while human beings, sick or well, should be distributed as much as possible.

In London, one wash-house‡ will do for a number of families, and is as good as giving an additional room to each ; but this does not break up our house system and convert London into a gigantic public institution.

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* Orderlies, Nos. 2 and 3, must take it every second day to be on duty an additional two hours, from 6—8 a.m., a time when two orderlies are certainly wanted. If the second arrangement be adopted it has the advantage of giving two orderlies after 6 in the morning for cleaning and arranging the ward. The second method obviates the necessity for the additional two hours duty in the morning.

† It is, however, impossible to lay down the nurse's hours absolutely. They must vary, according to the conditions of the hospital. None but the female superintendent can judge of this. A scheme of hours is given here only to show the importance of affording the nurse, if possible, 8 hours for sleep and personal cleanliness ; 2 hours for exercise, which should never be exceeded without written permission from the matron ; 2 hours for her making, mending, &c. For a nurse in her ward ought always to be *on duty*, never sitting down to her own personal work, or making *one of the party*. A good hospital nurse is a sentry on duty, within sight of the enemy's lines, and no relaxation of discipline can be excused. But to be this, she must have time allowed her to herself.

‡ It is found to be good policy not to mix the linen of different households.

NOTE A.

No. 47.—Lord Raglan to Lord Panmure.

(*Received March* 20.)

(Extract.) Before Sebastopol, March 3, 1855.

I beg now to lay before your lordship Dr. Hall's report of the state of the sick, and I will direct him to make one weekly, which I will transmit for your lordship's information.

(Enclosure.)

Dr. Hall to Lord Raglan.

My Lord, Before Sebastopol, March 19, 1855.

In transmitting the weekly state of sick of the army to the 17th instant, I have the honour to state, that though the sickness still amounts to 14·31 per cent., the mortality does not exceed 0·51 per cent., which is a proof that the diseases are milder in character; and I think I may safely say the general health and appearance of the men is greatly improved; and had not the duty, by the unavoidable operations of the siege going on, been increased of late, I think the sick list would have been still more diminished, as the men's condition is in every other way so much improved, both in diet, dress, and accommodation.

(Enclosure.)

Dr. Hall to Lord Raglan.

My Lord, Before Sebastopol, April 3, 1855.

In transmitting the weekly state of sick to the 31st March, I have the honour to state, that I am sure it will be pleasing to your lordship to learn, that the general health of the army continues steadily to improve; and although fevers and bowel complaints continue to prevail, they are both assuming a milder character, and the latter are of much less frequent occurrence.

During the present week the admissions to strength have been in the ratio of 3·93 per cent., and the deaths to strength 0·38 per cent.

Last week, the admissions to strength were 4·35 per cent., and the deaths 0·52 per cent.; which makes a decrease of 139 in the admissions, and 43 in the deaths during the week.

(Enclosure.)

Dr. Hall to Lord Raglan.

My Lord, Before Sebastopol, May 28, 1855.

The enclosed weekly state of sick to the 26th instant, I am glad to say, shows an improvement in the sanitary condition of the army. The cases of cholera which have been admitted during the week have been of a milder character, and the mortality from that disease has been much less; but it has extended to the Sardinian contingent, to the men of the land transport corps, and to the shipping in the harbour of Balaklava, and, from these sources, the admissions and deaths in the general hospital there have been considerably increased; no fewer than eighteen out of the twenty-five casualties which occurred there, having taken place amongst these extra patients. In future, I will have the extra patients excluded from the weekly state and shown separately; but as I cannot get fresh returns made out in time for the post on the present occasion, I have deducted the numbers from the general return.

The admissions to strength during the present week, have been in the ratio of 4·20 per cent.; and the deaths to strength, 0·27 per cent. Last week they were 4·53, and 0·47, respectively.

Fevers have been less numerous during the week, but diarrhœa has been slightly on the increase; and it has been noticed that many convalescent from fever have been seized, in some of whom the disease has run on to cholera and terminated fatally.

I have, &c.

J. Hall,

Inspector General of Hospitals.

Dr. Hall to General Codrington.

Head Quarters, Camp, Crimea,
December 31st, 1855.

The following abstract shows the admissions and deaths during the week, and those during the previous week.

	This week.		Last week.	
	Admitted.	Died.	Admitted.	Died.
Fevers	182	15	173	16
Head Affections	9	2	2	2
Chest ditto	279	0	221	1
Diarrhœa	117	3	204	4
Cholera	3	3	12	7
Dysentery	8	1	40	0
Rheumatism	44	2	58	1
Frost Bites	98	0	269	1
Wounds and Injuries	72	4	48	6
Ophthalmia	37	0	22	0
Other diseases	425	6	374	2
Total	1,274	36	1,423	40

I have, &c.

J. Hall,

Inspector-General of Hospitals.

NOTE B.

I have carefully compared all the statistics from six different official sources. I will here put in four sets of returns.

I.

Name of Ship.*	Deaths according to		
	Cumming-Maxwell Return.	House of Commons Return.	Adjutant's Return.
Kangaroo	—	22	—
Dunbar	22	10	30
Cambria	—	21	—
Vulcan	18	10	25
Andes	15	4	—
Colombo	30	30	57
Arthur the Great	24	50	30
Orient	32 or 33	26	45
Caduceus	114	104	—
Courier	16	33	16
Cornwall	6	6	8
Negotiator	6	6	—
Lady McNaughten	3	3	3
Australia	8	3	12
Cambria	None.	—	—
Echunga	7	6	1
Palmerston		7	5
&c., &c., &c.			

* The above comparison is made, taking the first seventeen ships in order, as their names stand in the returns.

In the Adjutant-General's Return from the Crimea, it will be seen that the total number of "deaths in the infantry, from October 1, 1854, to May 1, 1855," "on board ship or elsewhere" (meaning not at Scutari or in the Crimea), is 715.

Returns from the medical officers of each corps in the Crimea, and from the inspector-general of hospitals at Scutari, as collected by Sir A. Tulloch, show that during the same period, the number of deaths in cavalry, artillery, and royal engineers, was, to those in the infantry, as—

	Crimea.	Scutari.
Infantry - -	4,963	4,052
Cavalry, Artillery, Engineers - -	378	470

The mortality on board ship, including all arms of the service, is, from September 15, 1854, to February 11, 1855, according to—

Cumming-Maxwell Report.	House of Commons Report.	Scutari Adjutant's Report.
923	915	888

II.

From Returns of Adjutant's Office at Scutari. Recapitulation.

Months.	No. of Burials in each month.	No. of Deaths reported in each month.	Excess of Burials over Deaths in each month.
September 1854	165	78	87
October „	266	219	47
November „	368	291	77
December „	667	536	131
January 1855	1,473	1,360	113
February „	1,151	1,076	75
March „	418	416	2
April „	165	152	13
May „	76	76	
	4,749	4,204	545

Remarks.—517 of the 545 have been struck off the strength of the general depôt, the other 28 were men brought ashore either dead or insensible, with no marks to ascertain their names or regiments.

III.

In these returns the director-general himself uses the same figures for the "total number of men of Lord Raglan's *army* sick," and for the "total number of sick and wounded treated at *Scutari*."

Appendix to Report from the Sebastopol Committee, 2nd Report, p. 705.

Return showing the Total Number of Sick and Wounded treated in Hospital at Scutari.

Months.	Total treated.
During *November 1854* - - - -	16,846
„ *December 1854* - - -	19,479
„ *January 1855* - - - -	23,076

A. Smith, M.D., Director-General.

13, St. James's-place,
29th March 1855.

Appendix to Report from the Sebastopol Committee, p. 470.

No. 1.—Return showing the Total Number of Men of Lord Raglan's Army Sick during each Month, from the Landing in Turkey.

Months.	Total Sick or Wounded of all Arms during each Month.
1854, April - - - -	503
May - - -	1,835
June - - -	3,498
July - - - -	6,937
August - - -	11,236
September - - -	11,693
October - - -	11,988
November - - -	16,846
December - -	19,479
1855, *January* - - -	23,076
To 17 February - Crimea -	9,284
To 25 „ - Scutari -	6,725
To 17 „ - Abydos -	385
To 25 „ - Gallipoli -	70
To 20 „ - Smyrna -	500
Total to latest dates in February - - -	16,964

Army and Ordnance Medical Department,
14 March 1855.

A. Smith,
Director-General.

IV.

Deaths at Scutari and Koulali Hospitals, October 1, 1854, to April 30, 1855.

	1. Commandant at Scutari.	2. Medical Returns.	3. Head Roll Burials.	4. Reported Deaths.	5. Depôt Returns.	6. Inspector-General, as quoted by Sir A. Tulloch, (Infantry).
October -	—	250	266	219	213	144
November	—	267	368	291	244	228
December	—	393	667	536	493	423
January -	1,480	1,235	1,473	1,360	1,079	1,193
February	1,254	1,329	1,151	1,076	1,254	1,261
March -	424	555	418	416	324	587
April -	—	200	165	152	213	216
						4,052
						* Rem. 470
	—	4,229	4,508	4,050	3,820	4,522
	At Scutari and Koulali.		At Scutari.			

* Being Cavalry, Artillery, and Royal Engineers.

The above are the returns from different official sources. The discrepancies in them will no doubt be explained to us at some future time. Smyrna is not included. The Smyrna hospital was opened to sick February 15, and from that day till March 31, 127 deaths occurred, by the inspector-general's return. Returns 1 and 2 purport expressly to be for Scutari and Koulali. Returns 3, 4, 5 to be for Scutari alone. Return 6 *may* include Smyrna. Otherwise, being for the "infantry" alone, it would prove, in defiance of Euclid, that a part is greater than the whole. For the deaths in the month of March of infantry alone are greater than those recorded by the other returns in March for all arms of the service. However, the Smyrna supposition does not account for the difference to those unacquainted with these matters—as return 6 is

something less than return 2 (the medical return) for February, although something more for March—

For the first four months in Return 2, read—

October 1 to November 4 - -	250
November 5 to December 2 - -	267
December 3 to December 30 - -	393
December 31 to January 31 - -	1,235

Another principal medical officer's return shows from October 1 to November 4 - - 258, being a trifling difference between the two principal medical officers, easily explainable. According to the latter, the return of deaths is—

October - - - -	231
November - - -	279

But had this return been taken, December 1 and 2 would have been omitted.

The "medical return" (2.) for April is only up to April 28, yet exceeds by 35 the head-roll of burials, which is till April 30.

All other figures are copied absolutely as they were found in the different returns.

Some light may be thrown upon the discrepancies in the medical returns, when it is mentioned that, up to a period variously stated as sooner or later than February 1855, the medical returns of deaths were made up from the purveyor's diet rolls, upon which the name of the dead man appeared as scratched out, and from verbal or imperfect reports made by the medical officers in charge; that no bed-tickets existed up to this somewhat obscure period; and that it appears uncertain at what period the medical officers were required to fill up regular returns of deaths. I am led to believe this from evidence collected on the spot.

Returns 1 and 2 purport, as has been said, to be for both Scutari and Koulali. Nevertheless the numbers are sometimes greater, sometimes less than returns 3, 4, 5, which purport to be for Scutari alone. Returns 1 and 5 show the same for February 1855, although purporting to include different places.

Koulali was opened December 2, 1854, but the maximum of patients during that month was 240 only. In February the deaths there were 52 per cent. on cases treated, and 608 per cent. per annum on sick population.

NOTE C.

Extra-Diet Kitchens.

The kitchen apparatus of the barrack and general hospitals, as left by the Turks, consisted of thirteen large copper boilers in the former building, and eleven in the latter, set in brickwork, eight and five of which only, respectively, were available with safety.

In the general hospital the brickwork was loose, and the fuel was supplied from within the building, so that the kitchen was filled with smoke and the cooking impeded. This state of things continued till after the arrival of M. Soyer, in April, 1855, when the engineer officer set the boilers properly, and placed the flues so that they could be lighted from without—at the same time open charcoal stoves were placed, according to M. Soyer's directions, for the cooking of extra diets, heating coffee, &c.

In the barrack hospital the kitchen was at one end of the yard, with no other arrangement in use than the above-mentioned boilers, which were, however, perfectly well set, and supplied with wood placed in fire-places, the opening of which was on the outside. The kitchen was twenty yards from one end of the barrack yard, and 200 yards from the other; the barrack yard being 220 by 194 yards; the corridor, therefore, which was in the internal side of the building, was about half a mile in extent. External to it were the wards, with their windows in the outside of the building. A tower of several stories rose at each of the four angles of the building, which was placed upon a very steep slope. The mass of the patients was ranged on one flat and part of two other flats. In the winter of 1854–5, they varied from 1,900 to 2,500. The corridors had two rows of beds, placed transversely, leaving a vacant space along the centre of about three feet. The beds, measured across, with the intervals between them, extended over a space of from three to four miles, including, of course, both wards and corridors. As the eight coppers above mentioned, placed in one kitchen, had to supply three meals a day for this vast number, the issue was necessarily but slowly conducted—it occupied from an hour to an hour and a half. The meat was issued from the purveyors' store, at one office only, nominally between 9 o'clock and half-past 12, but the last of the meat was rarely brought into the kitchen before 1½ p.m. As soon as it was received by the orderlies, each carried the portion intended for his own mess or ward to the kitchen, and placed it in the copper, with some distinguishing mark (occasionally of very peculiar description), which was called a "tally." The nominal hour for dinner was one o'clock, when the portions were supposed to be cooked, and were re-delivered to the orderlies; and as no order of precedence was observed among them, it might thus easily happen that some of the portions remained three hours, and some not above half an hour in the coppers. The meat, after it had traversed the corridors, was divided into the required number of diets by the orderly, upon his own bed, and then distributed to the patients. The real hour of dinner was 2, 3, or even 3½ p.m.

No attempt at extra diets had been made except that of cooking arrowroot in one copper and fowls and chicken broth in another, or in tin pots on Turkish braziers. The orderlies cooked some small articles for the patients in their own mess-tins.

Under these circumstances Miss Nightingale established an extra-diet kitchen, in November 1854, which continued in action up to July 1855. Four cooks were employed in it, besides which, arrow-root, puddings, lemonade, &c., were prepared during the whole time in the nurses' kitchen, for the patients.

The regulations for military hospitals contain five diets, being "full," "half," "low," "milk," and "spoon." When the latter diet is ordered, consisting of 1 pint of tea and 4 oz. of bread for breakfast, and the same for tea, any articles may be ordered at the discretion of the medical officer, for the patient's other meals—these articles are then called "extras."

Under this regulation the medical officers drew for patients upon spoon diet (daily), "extras" on diet rolls for 700 to 800 men upon this kitchen.

The extra diet rolls were necessarily carried away with the diets, to ensure a proper delivery by the orderly, and were returned to the ward for the medical officer to form his diet roll next day.

In making the issues, therefore, the superintendent had only to comply with the diet rolls presented, which did not return to her hands. The following extract from a parliamentary document will exhibit the ordinary demand.

AVERAGE DAILY ISSUE of extra Diets supplied from F. Nightingale's Kitchens to the Extra-diet Rolls of the Medical Officers, Barrack Hospital, Scutari, from the 13th January 1855 to 13th February. Vide p. 41 of "Report upon the Scutari and Crimean Hospitals," by the Cumming Maxwell Commission.

No. supplied.	—	From Public Stores.	From Private sources.
25 gallons -	Beef tea.	80 lbs. beef.	—
15 „ -	Chicken broth.	28 chickens.	12 chickens.
40 „ -	Arrow-root.	—	Arrow-root.
15 „ -	Sago.	—	Sago.
240 quarts -	Barley water.	Barley.	—
10 „ -	Rice water	Rice.	—
8 „ -	Lemonade.	—	Lemons.
30 „ -	Milk.	—	Milk.
275 portions	Rice puddings.	Rice.	—
15 bottles -	Port wine.	—	Port wine.
3 „ -	Marsala.	—	Marsala.
3 „ -	Brandy.	—	Brandy.
15 lbs. -	Jelly.	—	Isinglass.
4 dozen -	Eggs.	—	Eggs.
40 „ -	Chickens.	28 chickens.	12 chickens.

"The average daily issue table," though a fair average for the three months of December 1854, January 1855, and February 1855, by no means reaches the amount of the issues of the end of December and beginning of January. For instance, in the return of issues for articles consumed in extra diets, from December 19, 1854, to December 31, 1854, in one division (viz. D) alone of the barrack hospital, containing 519 sick, appears an issue of 108 bottles of port wine mixed in the daily arrow-root from Miss Nightingale's kitchen.

A second extra-diet kitchen had been constructed by her in aid of the first about Christmas 1854, and three supplementary boilers for supplying hot water for arrow-root, &c., were also set upon one of the staircases at her request.

A third of these kitchens was afterwards added by a first-class staff-surgeon, in charge of one of the four divisions of the hospital.

At the general hospital, in consequence of the difficulties said to exist, a modified system was adopted, until the extra diets began to be cooked in the general kitchen arranged with M. Soyer in April 1855.

M. Soyer was also permitted to arrange extra diet kitchens at Haida Pacha and at Koulali.

At the five general hospitals attended by female nurses in the Crimea, extra-diet kitchens, in which they were, for the most part the cooks, were introduced under the female superintendent.

The arrangements of the extra-diet kitchen in the castle hospital at Balaklava having been formed at a later period, and when the purveyor's stores were more fully provided than when the establishments at Scutari commenced, were in some respects to be preferred, as interfering less with the ordinary rules of supply in military hospitals, and consequently imposing less responsibility on the female superintendent. In the case of many of the articles which enter into the extra diet-rolls, as "mutton chop, fowl, preserved "meat," it is obvious that no saving is effected by drawing, *en masse*, the portions allotted to several individuals; these were accordingly sent in by the purveyor according to the diet roll of the day without requisition, the only advantage arising from their being cooked in the extra-diet kitchen being, in the words of the purveyor, "that they were so much better done." But in the case of articles which are to be compounded, as sago, arrow-root, rice, or eggs, sugar, milk, &c., for puddings, or the materials for barley-water and lemonade, a very great saving is effected by drawing *en masse;* and for these articles, accordingly, the superintendent drew upon requisition, distinguishing, however, such requisitions from those drawn for the supply of the nurses, and having both countersigned by the medical officer. To supply from private sources most of the articles above mentioned would have been superfluous and justly unacceptable to the government. Butter, being a new and exceptional article, was of course supplied from private sources when ordered by requisition of the medical officer. A quantity was despatched by Her Majesty, and was placed by the purveyor in the charge of the superintendent, to be disposed of in conformity with the above regulation.

The consumption of the nurses can be proved to have been throughout rigidly moderate, according to the plainest frugality consistent with the preservation of full health and strength. It was considered needless to depart from the rule of letting the purveyor supply the staple articles, such as bread, meat, porter, candles, fuel; but arrow-root, wine, and spirits, when required (with few exceptions), and at Scutari many other articles, as tea, milk, butter, were supplied from private sources.

In consequence of the absence of any provision for sick and wounded officers in hospital, by the War Office regulations, the cooking for their service, in the castle and general hospitals in the Crimea, was entirely done by the female staff; part also of the materials for their use being supplied from private sources. And, by the express desire of the medical officer in charge, the superintendent drew for the sick officers wine, bread, and meat, under the head of nurses' supplies, although not consumed by the nurses.

Taking it for granted that it is neither the wish of the government nor of the people of England, that the soldier in hospital should go back to the condition of "former wars," and presuming that he is to be treated with that degree of decency and humanity which the improved feeling of the nineteenth century demands, the above statement furnishes perhaps some reason for concluding, that this treatment is supplied in many particulars, not only more efficiently, but also more economically by the system above described, than it could otherwise be afforded.

NOTE D.

NUMBER of SHIRTS found in PATIENTS' KNAPSACKS that are deposited in the Pack Store of the Barrack Hospital at Scutari.

Twenty-two.

SELKIRK STUART,
4th December 1854. *Purveyor to the Forces.*

RETURN of the NUMBER of SHIRTS issued from the PURVEYOR'S STORES in the GENERAL HOSPITAL and BARRACK HOSPITAL at SCUTARI, from 1st October 1854 to 16th February 1855.

Issued.	To General Hospital.	To Barrack Hospital.	To Kulali.	To Haidar Pasha.	To Miss Nightingale.	Total.
From store at General Hospital - -	4,203	—	—	512	1,000	5,715
From store at Barrack Hospital -	—	3,019	558	442	1,500	5,519
Totals issued -	4,203	3,019	551	954	2,500	11,234

Barrack Hospital, Scutari, SELKIRK STUART,
22nd February, 1855. *Purveyor of the Forces.*

ACCOUNT of CLOTHING received into QUARTERMASTER'S STORES at SCUTARI.

Date.	Shirts.	Drawers.	Socks.	Mitts.	Trowsers.	Boots.	—
1854.							
Dec. 5	589	1,173	4,628	—	—	—	Received from Constantinople, purchased by Captain Wetherall.
„ 16	3,588	1,817	4,597	—	—	—	
1855.							
Jan. 14	3,092	—	—	—	—	1,600	From Quartermaster-General.
„ 26	—	—	—	—	600	—	Purchased by order of Lord William Paulet.
Feb. 2	—	—	2,081	4,086	—	—	From Constantinople, purchased by Captain Wetherall.
„ 3	—	1,000	—	—	—	—	Purchased by order of Lord William Paulet.
„ 5	2,000	4,000	—	—	—	360	From Quartermaster-General.
Total	9,269	7,990	11,306	4,086	600	1,960	

Of the above clothing there has been served out to the men of the General Depôt, and to invalids proceeding to England, since the 5th December, as follows :—

Date.	Shirts.	Drawers.	Socks.	Mitts.	Trowsers.	Boots.	—
	4,387	3,088	6,703	1,500	300	1,930	and 1,530 blankets.

JASPER HALL,
Captain 4th K.O. Regiment,
Scutari, 15th February 1855. *Qr. Mr.*

The store was established when the first articles of clothing were received, viz., on the 5th December 1854, as above.

JASPER HALL, *Captain 4th Regiment, Qr. Mr.*

MAJOR SILLERY.

"I was commandant from the time the army left till within ten or twelve days. When convalescents or invalids leave the hospital, they come under my command. *Many of the sick and wounded men arrived with little or no clothing. From the want of any establishment for the purpose at this depôt, there is the greatest difficulty in supplying such men with necessaries.* There is a non-commissioned officer of each regiment here in charge of the men of his own regiment. It is the duty of that non-commissioned officer to meet the wants of the men if possible, getting the money for the purpose from the paymaster, who stops the amount from the soldiers' pay. The corporal must get the shirts when he can. In the case of boots, which are a heavy article, there is more difficulty. We cannot get the regimental boots here. For men going up to the Crimea, we look very closely as to boots. Till the last draft we sent up about a fortnight ago, we generally got boots from the commissariat for men going up ; but I do not know if we got any for invalids. Every man is examined before he goes to the Crimea or home, but not when he comes out of hospital. We endeavour to complete the outfits as much as we can. This is done partly out of commissariat stores and dead men's effects. In the same way we give the red coatees of dead men.

"We want a quartermaster's establishment,—a large store with necessaries of all kinds. The complication of accounts with so many soldiers of different regiments requires a large staff. In a regiment, a soldier who wants anything is supplied by his captain, who inspects him and draws the articles wanting from the quartermaster's stores. Here we have no officer who discharges the duty of a captain."

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APPENDIX.

APPENDIX I.

(Paper given in by Dr. Smith.)

REGULATIONS for CANDIDATES for the APPOINTMENT of ASSISTANT-SURGEONS in the ARMY.

Recommended by _____

Christian and Surname at full length.

I _____ years of age in _____ last, a candidate for employment in the medical department of the army, do hereby attest my readiness to engage for general service, whether at home or abroad, and to proceed on duty immediately on being gazetted.

I declare that I am unmarried, and that I labour under no mental or constitutional disease, nor *any imperfection* or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate.

Signature _____

I have pursued the under-mentioned course of study, of which I am ready to produce the vouchers for registry, and also a certificate of my age, namely:—

I possess certificates of regular attendance at the under-mentioned hospitals and courses of lectures for the number of months stated:—

The	hospital or infirmary for	months.
The	hospital for mental derangement for	months.
The	hospital for disseases of the eye for	months.
The	Lying-in hospital for	months.

Stating the Number of Lectures in each Course.

Lecturcs.	Professors' Names.	Place.	Period in Months.
Anatomy, by			
Practical anatomy, by (*stating the number of subjects dissected*)			
Surgery, by			
Clinical surgery, by			
Military surgery, by			
Physiology, by			
Practice of medicine, or general pathology, by			
Clinical lectures on the practice of physic, by			
Midwifery, by			
Practical midwifery, by			
Chemistry, by			
Practical chemistry, by			
Botany, by			
Bateria medica, by			
Practical pharmacy, by			
or an apprenticeship			
Forensic medicine, by			
Morbid anatomy and pathology, by			
Natural history, by			
Natural philosophy, by			
Logic, by			
Mathematics, by			
Comparative anatomy			

The Dates of Graduations and the Universities or Colleges are to be stated.

I have the degree of A.M. or A.B. from the _____

I have the degree of M.D. from the _____

I have a diploma for surgery from the _____

(*Signature at full length*) _____

(*Date*) _____

(*Place of Residence*) _____

MEMORANDA.

1st. In selecting from among the candidates for the medical department of the army, a preference is given to those who can fill up all the blanks in the preceding pages, by having the acquirements therein stated. The name of no gentleman can be placed on the list who does not possess a diploma from the Royal College of Surgeons of England, Scotland, or Ireland, or from the Faculty of Physicians and Surgeons of Glasgow, or other corporate body legally entitled to grant a diploma in surgery, and who cannot produce the following testimonials:—

18 months'	attendance at an hospital of celebrity, where the average number of in-patients is not less than 100.
12	„ anatomy.
12	„ practical anatomy.
6	„ physiology.
12	„ surgery, (or, what is preferred) 6 months' surgery, and 6 months' military surgery.
8	„ clinical surgery, a complete course of two or three lectures during the week.
12	„ practice of physic, or 6 months' practice of physic, and 6 of general pathology.
8	„ clinical lectures on ditto, the same as required in surgery.
12	„ chemistry.
6	„ practical chemistry.
3	„ botany.
3	„ materia medica.
3	„ practical pharmacy or apprenticeship.
3	„ natural history.
3	„ midwifery.
3	„ practical midwifery.
1 course	natural philosophy.
1 course	logic.

2nd. The candidate must be unmarried, not beyond 25 years of age, nor under 21 years,

3rd. Candidates who have had an University education, and have the degree of A.B. or A.M., as well as that of M.D., will be preferred; but a liberal education, and a competent knowledge of the Greek and Latin languages, are indispensably requisite in every candidate.

4th. The greater the attainments of the candidates the more eligible will they subsequently be deemed for promotion, as selections to fill vacancies, especially in the higher ranks, will be guided more by reference to such acquirements, than to mere seniority.

5th. Although the British schools are specified, it is to be understood that candidates who have received a regular medical education in approved foreign Universities or schools will be admitted to examination.

6th. With the exception of practice of physic and clinical medicine by one teacher, candidates must have attended separate lecturers for each branch of medical science.

7th. Before promotion from the rank of assistant-surgeon to any higher rank, every gentleman must be prepared for such other examination as may be ordered before a board of medical officers.

8th. Diplomas, tickets of attendance on lectures, and certificates of regular attendance by each professor or lecturer, must be lodged at this office for examination and registry at least one week before the candidate appears for examination, likewise certificates of moral conduct and character, one of them by the parochial minister, if possible. Baptismal certificates are required at the same time, and if the parish register cannot be resorted to, an affidavit from one of the parents, or some near relative who can attest the fact, will be accepted.

9th. The certificate of the teacher of practical anatomy must state the number of subjects or parts dissected by the pupil.

10th. Certificates of lectures and attendance must be from physicians or surgeons of the recognized colleges or medical schools of the United Kingdom, or of foreign Universities.

11th. All candidates for medical appointments are required to be conversant with Cullen's Nosology.

Note.—All communications to be prepaid, or if not, to be forwarded, addressed *outside* to "The Right Honourable the Secretary at War," with the words "Army Medical Department" at the left-hand corner.—*This half sheet is not to be torn off.*

Army and Ordnance Medical Department,
February 1855.

APPENDIX II.

(Paper given in by Sir J. Liddell, C.B.)

Circular, No. 116.*

REGULATIONS for CANDIDATES for the OFFICE of ASSISTANT-SURGEON in the ROYAL NAVY.

Admiralty, March 1st, 1853.

THE Right Honourable the Lords Commissioners of the Admiralty are pleased to direct, that the following regulations, relative to the examination of candidates for the appointment of assistant-surgeon in the Royal Navy, shall in future be adopted :—

That a candidate for entry into the Royal Navy shall make a written application to that effect, addressed to the Secretary of the Admiralty; on the receipt of which application he will be furnished with the regulations, and a printed form to be filled up by him, to show if he possess the required qualifications.

As vacancies occur, the number of candidates required will be ordered to attend at the Admiralty Office, bringing with them the requisite certificates, showing that they are fully qualified by age, professional ability, &c., when they will be examined by a Board of Medical Officers, to be named by their Lordships.

Such candidates as shall have been found in all respects competent for the appointment of assistant-surgeon, will be forthwith nominated to one of the naval hospitals at home, to await appointments to any of Her Majesty's ships; or should their services not be immediately required, their names will be duly registered for early appointments, as vacancies may occur.

That no person be admitted as an assistant-surgeon in the Royal Navy, who shall not produce a certificate from one of the Royal Colleges of Surgeons of England, Edinburgh, or Dublin, or from the Faculty of Physicians and Surgeons of Glasgow, of his fitness for that office; nor as a surgeon, unless he shall produce a diploma or certificate, from one of the said Royal Colleges or Faculty, founded on an examination to be passed subsequently to his appointment of assistant-surgeon, as to his fitness for the situation of surgeon in the navy; and in every case the candidate producing such certificate or diploma shall also undergo a further examination, touching his qualifications in all the necessary branches and points of medicine and surgery for each of the steps in the naval medical service; and that previously to the admission of assistant-surgeons into the navy, it will be required that they produce proof of having received a preliminary classical education, and that they possess in particular a competent knowledge of Latin; also,

That they are of good moral character, the certificate of which must be signed by the clergyman of the parish, or by a magistrate of the district.

That they have served an apprenticeship, or have been engaged for not less than six months in practical pharmacy.

That their age be not less than 20 years nor more than 26 years.

That they have actually attended an hospital in London, Edinburgh, Dublin, Glasgow, Aberdeen, Manchester, or Bristol, for eighteen months subsequently to the age of eighteen, in which hospital the average number of patients is not less than 100.

That they have been engaged in actual dissections of the human body twelve months; the certificate of which from the teacher must state the number of subjects or parts dissected by the candidate.

That they have attended lectures, &c. on the following subjects, at established schools of eminence, by physicians or surgeons of the recognized colleges of physicians and surgeons in the United Kingdom, for periods not less than hereafter stated; observing, however, that such lectures will not be admitted if the teacher shall lecture on more than one branch of science, or if the lectures on anatomy, surgery, and medicine, be not attended during three distinct winter sessions of six months each.

Anatomy	Or general anatomy, 12 months - and comparative anatomy, 6 months - - - - -	18 months.
Surgery -	Or general surgery, 12 months - and military surgery, 6 months -	18 months.
Theory of medicine	If the lectures on the theory and practice of medicine be given in conjunction, then the period required is 18 months - -	6 „
Practice of ditto*		12 „
Clinical lectures (at an hospital as above)	On the practice of medicine -	6 „
	On the practice of surgery - -	6 „
Chemistry -	Or lectures on chemistry, 3 months and practical chemistry, 3 months	6 „
Materia medica	- - - - -	6 „
Midwifery -	Accompanied by certificates stating the number of midwifery cases personally attended - -	6 „
Botany	- - - - -	3 „

* Six months' lectures on pathology, if given at a University where there may be a professorship on that branch of science, will be admitted in lieu of six months' lectures on the practice of medicine.

In addition to the tickets for the lectures, certificates must be produced from the professors, &c. by whom the lectures were given, stating the periods (in months) *actually* attended by the candidates. The time also of actual attendance at an hospital or infirmary must be certified; and the tickets as well as certificates of attendance, age, moral character, &c., must be produced by the candidate previously to his examination.

Although the above are the only qualifications which are absolutely required in candidates for the appointment of assistant-surgeon, a favourable consideration will be given to the cases of those who have obtained the degree of M.D., at either of the Universities of Oxford, Cambridge, Edinburgh, Dublin, Glasgow, London, or Aberdeen; or who by possessing a knowledge of diseases of the eye, and of any branch of science connected with the profession, such as medical jurisprudence, natural history, natural philosophy, &c. appear to be more peculiarly eligible for admission into the service, observing, however, that lectures on these or any other subjects cannot be admitted as compensating for any deficiency in those required by the regulations.

By the rules of the service, no assistant-surgeon can be promoted to the rank of surgeon until he shall have served three years (one year of which must be in a ship actually employed at sea), and can produce a diploma from one of the before-mentioned Royal Colleges or the Faculty of Physicians and Surgeons, and it is resolved that not any diploma or certificate of examination from either of the aforesaid Royal Colleges shall be admitted towards the qualification for surgeon, unless the diploma or certificate shall be obtained on an examination passed after a period of not less than three years' actual service; observing, that no one can be admitted to an examination for surgeon unless, as herein-before mentioned, he can produce a diploma, together with the most satisfactory certificates, that he has performed, on the dead body, under the superintendence of a professor or teacher of known eminence, all the capital operations of surgery, and is perfectly competent to perform any operation with skill and dexterity, and thoroughly acquainted with the anatomy of the parts involved in such operation; without which qualification, no one hereafter can be promoted to the higher branches of the service; and whenever assistant-surgeons already in the service whose professional education may not be in accordance with the above) obtain leave to study previously to their passing for surgeon, they will be required, on their examination, to produce testimonials of their having availed themselves of the period of leave to complete their education agreeably to these regulations generally.

It is also to be observed, that candidates who may be admitted into the naval medical service, must serve in whatever ships, &c., they may be appointed to; and that in the event of their being unable to do so from sea sickness, their names cannot be continued on the naval medical list, nor can they, of course, be allowed half-pay,

By command of their Lordships,

R. OSBORNE.

APPENDIX III.

(*Furnished by the India Board.*)

REGULATIONS for the ADMISSION of CANDIDATES for the Appointment of ASSISTANT-SURGEON in the Service of the EAST INDIA COMPANY.

ALL natural-born subjects of Her Majesty between 22 and 28 years of age, and of sound bodily health, may be candidates for admission into the service of the East India Company as assistant-surgeons.

They must subscribe and send in to Dr. Scott, the physician to the Honourable East India Company, 10 days before the period fixed for each examination, a declaration to the following effect:—

"I (christian and surname at full length), a candidate for employment as an assistant-surgeon in the service of the East India Company, do hereby declare that I was years of age on the day of last, and that I labour under no constitutional disease or physical disability that can interfere with the due discharge of the duties of a medical officer; and I also attest my readiness to proceed on duty to India within three months of receiving my appointment."

This declaration must be accompanied by the following documents:—

1. Proof of age, either by extract from the register of the parish in which the candidate was born, or by his own declaration, pursuant to the Act 5 & 6 William IV. cap. 62.
2. A certificate of moral character from a magistrate, or a minister of the religious denomination to which the candidate belongs, who has personally known him for at least two preceding years.
3. A diploma in surgery; or a degree in medicine, provided an examination in surgery be required for such degree; from some body competent by law to grant or confer such diploma or degree.
4. A certificate of having attended two courses of lectures, of six months each, on the practice of physic, and of having attended, for six months, the practice and clinical instruction of the physicians at some hospital containing at least, on an average, one hundred in-patients; or of having attended one course of lectures, of six months, on the practice of physic, and clinical instruction for twelve months.
5. A certificate of having attended, for three months, the practical instruction given at one of the public asylums for the treatment of the insane.
6. A certificate of having attended, for three months, one of the institutions, or wards of an hospital especially devoted to the treatment of ophthalmic disease.

Candidates who may not have been able to attend the practice of an asylum for the insane, or of an ophthalmic hospital, for three months previous to their offering themselves for examination, will not be excluded from examination, but will, if successful in obtaining recommendation for appointments, be required to produce certificates of having attended such practice during the interval between the examination and the time of proceeding to India.

7. A certificate of having attended a course of lectures on midwifery; and of having conducted at least six labours.
8. A certificate of having acquired a practical knowledge of cupping.

Candidates may also, at their option, send in certificates of attendance at any hospitals, or on any course of lectures, in addition to the above. Attendance on a course of military surgery, and the practical study of surgical operations on the dead body, are recommended.

The examination will include the following subjects:—

1. Surgery in all its departments.
2. Medicine, including the diseases of women and children, Therapeutics, Pharmacy, and Hygiene.
3. Anatomy and Physiology, including Comparative Anatomy.
4. Natural History, including Botany and Zoology.

The following are the books recommended in—

Zoology and Comparative Anatomy—

Outlines of the Structure of the Animal Kingdom, by Rymer Jones.

Cours Elémentaire d'Histoire Naturelle, par Milne Edwards.

Botany—

Lindley's School Botany.

Lindley's Elements of Botany.

The examination will be conducted—

1. By means of written questions and answers.
2. By object examinations and experiments, when the subject admits of such tests.
3. By practical examination of patients, and by operations on the dead body.
4. By *vivâ voce* examination.

The persons who shall be pronounced by the examiners to be the best qualified in all respects, will be appointed to fill the requisite number of appointments as assistant-surgeons in the East India Company's service, and so far as the requirements of the service will permit, they will have the choice of the presidency in India to which they shall be appointed, according to the order of merit in which they stand on the list resulting from such examination.

All assistant-surgeons are required to subscribe to the military or medical, and medical retiring funds, at the presidencies to which they may be respectively appointed, and to the military orphan society also, if appointed to Bengal.

All assistant-surgeons who shall neglect or refuse to proceed to India under the orders of the Court of Directors, within three months from the date of their appointment, will be considered as having forfeited it, unless special circumstances shall justify a departure from this regulation. A copy of these regulations, and any further information, may be obtained on application to the Secretary of the Military Department, East India House.

The examinations will take place in the months of January and July in each year, and due notice will be given by public advertisement of the days appointed, and of the probable number of candidates to be selected.

APPENDIX IV.

(*Given in by Sir J. Liddell with reference to Question* 226.)

CERTIFICATE required of NAVAL ASSISTANT-SURGEONS before PROMOTION.

Capital Operations of Surgery on the Dead Body.

THIS is to certify, that _____ has, under my personal superintendence, made a dissection of the surgical regions of the body, and performed all the capital operations of surgery thereon;—that he is perfectly competent to perform any operation with skill and dexterity; and that he is thoroughly acquainted with the anatomy of the parts involved in such operations.

Given under my hand, this _____ day of _____

_____

*

_____

* Professor, or Teacher, as the case may be.

APPENDIX V.

(Given in by Dr. Sutherland.)

MINISTÈRE DE LA GUERRE.

École impériale de Médecine et de Pharmacie Militaires.

Année 1857.

CLINIQUES.

Cours.	Noms des Professeurs.	Jours et Heures.
Clinique médicale - - (*toute l'année*)	M. Godelier - -	*Lundi et Vendredi* - - - de 8 à 10 heures.
Id. chirurgicale - - *id.* -	M. le Baron Larrey -	*Mardi et Samedi* - - - de 8 à 10 *id.*
Id. des blessures de guerre *id.* -	*Id.* -	*Jeudi* - - - - de 8 à 10 *id.*
Id. des maladies vénériennes (*hiver*) -	M. Lustreman - -	*Mercredi* - - - - de 8 à 10 *id.*
Id. des maladies cutanées - (*été*) -	M. Mounier - -	*Mercredi* - - - - de 8 à 10 *id.*

1er QUADRIMESTRE.

du 15 Janvier au 15 Mai.

Anatomie des régions - - -	M. Mounier - -	*Lundi, Mercredi et Vendredi* - de midi à 1 h. ½
Chimie appliquée aux expertises dans l'armée -	M. Poggiale - -	*Mardi et Samedi* - - - de midi à 1 h. ½
Maladies et épidemies de l'armée - - -	M. Laveran - -	*Lundi, Mercredi et Vendredi* - de 4 à 5 heures.
Diagnostic et exercices qui s'y rattachent -	M. Tholozan, agrégé -	*Mardi et Samedi* - - de 4 à 5 *id.*
Bandages et appareils - - - -	M. Baizeau, *id.* -	*Samedi* - - - - de 3 à 4 *id.*

2e QUADRIMESTRE.

du 20 Mai au 20 Septembre.

Chimie appliquée aux expertises - -	M. Poggiale - -	*Mardi et Samedi* - - de midi à 1 h. ½
Hygiène et médecine légale militaires -	M. Champouillon -	*Lundi, Mercredi et Vendredi* - de 4 à 5 heures.
Médecine opératoire - - - -	M. Lustreman - -	*Lundi, Mercredi et Vendredi* - de midi à 1 h. ½
Bandages et appareils - - -	M. Baizeau, agrégé -	*Samedi* - - - - de 1½ à 3 h.

REPARTITION DU TEMPS.

Tous les jours, { en *hiver*, de 7 à 10 heures, / en *été*, de 6 à 10 *id.* } serviee pratique et cliniques.

1er QUADRIMESTRE.

Lundi	de midi à 1 heure ½.	Anatomie - - - - -	MM. Mounier, profess.
	de 1 heure à ½ 4 h.	Travaux anatomiques - - - - -	„ Trudeau, agrégé.
	de 4 heures à 5 h.	Cours des épidémies - - - - -	„ Laveran, profess.
Mardi	de midi à 1 heure ½.	Chimie appliquée - - - - -	„ Poggiale, profess.
	de 1 heure ½ à 4 h.	Travaux anatomiques - - - -	„ Trudeau, agrégé.
	de 4 heures à 5 h.	Cours et exercices de diagnostic - - - -	„ Tholozan, agrégé.
Mercredi ...	de midi à 1 heure ½.	Anatomie - - - - -	„ Mounier, profess.
	de 1 heure ½ à 4 h.	Travaux anatomiques - - - -	„ Trudeau, agrégé.
	de 4 à 5 heures.	Cours des épidémies - - - - -	„ Laveran, profess.
Jeudi	de midi à 1 heure ½.	Equitation - - - - - -	
	Sortie.		
Vendredi ...	de midi à 1 heure ½.	Anatomie - - - - - -	„ Mounier, profess.
	de 1 heure ½ à 4 h.	Manipulations chimiques - - - -	„ Coulier, agrégé.
	de 4 à 5 heures.	Cours des épidémies - - - - -	„ Laveran, profess.
Samedi	de midi à 1 heure ½.	Chimie appliquée - - - - -	„ Poggiale, profess.
	de 1 heure ½ à 3 h.	Manipulations chimiques - - - -	„ Coulier, agrégé.
	de 3 à 4 heures.	Bandages - - - - - -	„ Baizeau, agrégé.
	de 4 à 5 heures.	Cours et exercices de diagnostic - - - -	„ Tholozan, agrégé.

2e QUADRIMESTRE.

Lundi	de midi à 1 heure ½.	Médecine opératoire - - - - -	MM. Lustreman, profess.
	de 1 heure ½ à 4 h.	Manipulations chimiques - - - -	„ Coulier, agrégé.
	de 4 à 5 heures.	Cours d'hygiène et de médecine légale militaires -	„ Champouillon, prof.
Mardi	de midi à 1 heure ½.	Chimie appliquée - - - - -	„ Poggiale, profess.
	de 1 heure ½ à 4 h.	Exercices de médecine opératoire - - -	„ Legouest, agrégé.
	de 4 à 5 heures.	Exercices pratiques d'hygiène et de médecine légale -	„ Lallemand, agrégé.
Mercredi ...	de midi à 1 heure ½.	Médecine opératoire - - - - -	„ Lustreman, profess.
	de 1 heure ½ à 3 h.	Bandages - - - - - -	„ Baizeau, agrégé.
	de 3 à 4 heures.	Répétitions d'épidémiologie - - -	„ Jacquot, agrégé.
	de 4 à 5 heures.	Cours d'hygiène et de médecine légale - - -	„ Champouillon, prof.
Jeudi	de midi à 1 heure ½.	Equitation - - - - - -	
	Sortie.		
Vendredi ...	de midi à 1 heure ½.	Médecine opératoire - - - - -	„ Lustreman, profess.
	de 1 heure ½ à 4 h.	Manipulations chimiques - - - -	„ Coulier, agrégé.
	de 4 à 5 heures.	Cours d'hygiène et de médecine légale militaires - -	„ Champouillon, prof.
Samedi.....	de midi à 1 heure ½.	Chimie appliquée - - - - -	„ Poggiale, profess.
	de 1 heure ½ à 4 h.	Exercices de médecine opératoire - - -	„ Legouest, agrégé.
	de 4 à 5 heures.	Exercices d'hygiène pratique et de médecine légale militaires	„ Lallemand, agrégé.

Par autorisation de S. E. M. le Ministre de la Guerre, des Elèves civils peuvent être admis à suivre les Cours de l'Ecole ; à cet effet, ils devront se présenter à M. le Directeur de l'École, qui leur remettra des cartes d'entrée.

Paris, le 15 Janvier 1857.

L'Inspecteur du Service de Santé militaire, Directeur de l'École,
Michel Lévy.

APPENDIX VI.

(Furnished by Sir J. Liddell, C.B.)

RETURNS relative to the Medical Department of the Royal Navy.

Medical Department, Admiralty,
26th June 1857.

No. 1.—NUMBER of ASSISTANT-SURGEONS who entered the ROYAL NAVY in each Year from 1848 to 1852 inclusive, viz. :—

In the year 1848 there were 29 admitted.
Do. 1849 „ 17 „
Do. 1850 „ 11 „
Do. 1851 „ 28 „
Do. 1852 „ 26 „

No. 2.—NUMBER of NAVAL MEDICAL OFFICERS on FULL-PAY on 1st April 1857, distinguishing the different Grades, viz. :—

	No.
Inspectors of Hospitals and Fleets -	4
Deputy Inspectors do. -	10
Surgeons - - -	192
Assistant-Surgeons - -	259

No. 3.—NUMBER of NAVAL MEDICAL OFFICERS on HALF-PAY on 1st April 1857, distinguishing the different Ranks, viz. :—

	No. on active list.	No. on retired list.
	—	—
Inspectors of Hospitals and Fleets - - -	2	5
Deputy Inspectors do. -	5	10
Surgeons - - -	128	253
Assistant-Surgeons - -	3	29

No. 4.—A TABULAR STATEMENT of the RATES of PAY and HALF-PAY of the different Grades of NAVAL MEDICAL OFFICERS, with the Increase granted for Length of Service.

Rank and Service.	Full-pay.	Half-pay.
	£ s. d.	£ s. d.
Inspectors of Hospitals & Fleets — When employed at hospitals on first appointment - - -	1 13 0 a day	0 17 6
Do. do. — After five years service as such	2 2 0 „	1 1 0
Do. do. — When employed afloat on first appointment -	1 11 6 „	0 17 6
Do. do. — After five years service as such	2 2 0 „	1 1 0
Deputy-Inspectors employed at hospitals - - -	1 7 6 „	15*s.* under 7 years service as such, and 1*l.* 1*s.* above 7 years service
Do. do. employed afloat -	1 1 0 „	
Surgeons of dockyards - -	450*l.* and 500*l.* a year.	According to length of service as medical officer
Surgeons employed at hospitals with less than 20 years service as a medical officer - -	0 16 6 a day	Do. do.
Do. above 20 years - -	1 0 6 „	

Tabular Statement of Rates of Pay, &c.—*continued.*

Rank and Service.	Full-pay.	Half-pay.
	£ s. d.	£ s. d.
Surgeons on first appointment under six years full-pay, including assistant - surgeon's time - -	0 11 0 „	0 5 0 a day
Do. above six years full-pay, including assistant - surgeon's time - - -	0 12 0 „	0 6 0 „
Do. do. 10 years do. do.	0 14 0 „	0 7 0 „
Do. do. 15 years do. do.	0 14 0 „	0 8 0 „
Do. do. 20 years do. do.	0 18 0 „	0 10 0 „
Do. do. 25 years do. do. with leave to retire	0 18 0 „	0 13 0 „
Do. do. 30 years do. do.	0 18 0 „	0 15 0 „
Assistant-Surgeons — In ships where a surgeon is borne—if under three years full-pay service	0 8 1 „	0 2 0 „
Do. — Ditto if above three years full-pay service - - -	0 8 7 „	0 3 0 „
Do. — Ditto if above 10 years full-pay service	0 9 7 „	0 4 6 „
Do. — In ships where no surgeon is borne —if under 10 years full-pay service - - -	0 9 1 „	0 3 0 „
Do. — Ditto if above 10 years full-pay service	0 10 1 „	0 4 6 „
Do. above 20 years service	„ „	0 5 0 „

No. 5.—SCALE of RETIRING ALLOWANCES for NAVAL MEDICAL INSPECTORS and DEPUTY-INSPECTORS.

Active Service.	Retirement. Per diem.	Retirement. Per annum.
	£ s. d.	£ s. d.
Inspectors, from date of promotion to the rank (unless entitled to a higher rate by previous service) -	0 17 6	319 7 6
Ditto, after 20 years service, including 3 years as inspector of hospitals	1 1 6	392 7 6
Ditto, „ 25 years service - -	1 4 3	442 11 3
Ditto, „ 30 ditto - - -	1 7 0	492 15 0
Ditto, „ 35 ditto - - -	1 9 8	541 8 4
Ditto, „ 40 ditto - - - -	1 12 6	593 2 6
Deputy-Inspectors, from date of promotion to the rank (unless entitled to a higher rate by previous service)	0 15 0	273 15 0
Ditto, after 20 years service, including 3 years as deputy-inspector - -	0 17 6	319 7 6
Ditto, „ 25 years service - -	0 19 9	360 8 9
Ditto, „ 30 ditto - - -	1 2 0	401 10 0
Ditto, „ 35 ditto - - -	1 4 3	442 11 3
Ditto, „ 40 ditto - - -	1 6 6	483 12 6
Naval surgeons and assistant-surgeons have no scale for retirement, as those on the retired list are in the receipt of half-pay.		

J. LIDDELL,
Director General, &c.

APPENDIX VII.

(Furnished by Dr. A. Smith.)

RETURN relative to the Army Medical Department.

No. 1.—NUMBER of ASSISTANT-SURGEONS appointed in each Year from 1848 to 1852, both inclusive.

1848	33
1849	21
1850	20
1851	46
1852	40

No. 2.—NUMBER of MEDICAL OFFICERS on FULL-PAY on the 1st April 1857, distinguishing the various Grades.

Inspectors-general of hospitals	6
Deputy inspectors-general of hospitals	17
Staff surgeons, 1st class	30
Staff surgeons, 2nd class	70
Staff assistant-surgeons 130 do. vacancies 8	138
Regimental surgeons	145
Do. assistant-surgeons 251 Do. vacancies 3	254

Royal Artillery.

Deputy inspector-general of hospitals	1
Senior surgeons	4
Surgeons 15 Do. vacancies 2	17
Assistant-surgeons 39 Do. vacancies 6	45

No. 3.—NUMBER of MEDICAL OFFICERS on HALF-PAY on the 1st April 1857, distinguishing the Ranks.

Inspector-general of hospitals	1
Deputy inspectors-general of hospitals	3
Staff surgeons, 1st class	20
Staff surgeons, 2nd class	18
Assistant-surgeons	2

No. 4.—NUMBER of MEDICAL OFFICERS on RETIRED PAY on the 1st April 1857, distinguishing the Ranks.

Director-general	1
Principal inspector-general	1
Inspectors-general of hospitals	20
Deputy inspectors-general	19
Assistant-inspectors	4
Staff surgeons, 1st class	29
Surgeons to the forces previously to the warrant of 2nd July 1841	28
Regimental surgeons, and staff surgeons 2nd class	131
Assistant-surgeons	34

NOTE.—This return must necessarily be imperfect, as the deaths of half-pay medical officers are rarely reported to this office.

No. 5.—STATEMENT showing the DAILY RATES of FULL PAY of the different Grades of MEDICAL OFFICERS, with the Increase granted on the Completion of certain Periods of Service.

Inspectors-General of Hospitals.

	£	s.	d.
After 10, but under 20 years service	1	16	0
After 20, but under 25 years service	1	18	0
After 25 years service	2	0	0

Deputy Inspectors-General of Hospitals.

After 10, but under 20 years service	1	4	0
After 20, but under 25 years service	1	8	0
After 25 years service	1	10	0

Staff Surgeons, First Class.

After 10, but under 20 years service	0	19	0
After 20, but under 25 years service	1	2	0
After 25 years service	1	4	0

Regimental Surgeons and Staff Surgeons, Second Class.

	£	s.	d.
Under 10 years service	0	13	0
After 10, but under 20 years service	0	15	0
After 20, but under 25 years service	0	19	0
After 25 years service	1	2	0

Assistant Surgeons.

Under 10 years service	0	7	6
After 10, but under 20 years service	0	10	0
After 20, but under 25 years service	0	10	0
After 25 years service	0	10	0

No. 6.—STATEMENT of the DAILY RATES of HALF-PAY and RETIRED PAY of the various Grades of MEDICAL OFFICERS, with the Increase granted after certain Periods of Service on Full Pay.

—	Half Pay on Reduction.			Retired Pay or Ill-health.		
	£	s.	d.	£	s.	d.
Inspectors-General of Hospitals.						
After 20 but under 25 years service.	1	0	0	0	12	0
After 25 but under 30 years service.	1	5	0	0	15	0
After 30 years service	1	10	0	1	0	0
Deputy Inspectors-General of Hospitals.						
Under 10 years service	0	8	0	0	7	0
After 10 but under 20 years service.	0	10	6	0	8	0
After 20 but under 25 years service.	0	14	0	0	10	0
After 25 but under 30 years service.	0	17	0	0	14	0
After 30 years service	1	0	0	0	18	0
Staff Surgeons of the 1st Class.						
Under 10 years service	0	7	6	0	6	6
After 10 but under 20 years service.	0	10	0	0	7	6
After 20 but under 25 years service.	0	12	6	0	9	6
After 25 but under 30 years service.	0	15	0	0	13	0
After 30 years service	0	17	0	0	16	0
Regimental Surgeons, and Staff Surgeons of the 2nd Class.						
Under 10 years service	0	6	0	0	5	6
After 10 but under 20 years service.	0	8	6	0	6	0
After 20 but under 25 years service.	0	11	0	0	8	0
After 25 but under 30 years service.	0	13	0	0	11	6
After 30 years service	0	15	0	0	15	0
Assistant-Surgeons.						
Under 10 years service	0	4	0	0	3	0
After 10 but under 20 years service.	0	5	0	0	4	0
After 20 but under 25 years service.	0	6	0	0	5	0
After 25 but under 30 years service.	0	7	0	0	6	0
After 30 years service	0	7	6	0	7	0

Right to Retire.

Every medical officer who may have served upon full pay for 25 years and upwards, shall have a right to retire on half pay, and may be recommended for the higher rate, provided he shall have served 3 years in the rank from which he retires; but if he shall not have served 3 years in such rank, he shall receive only the rate attached to the rank from which he was last promoted.

If a medical officer shall have served 30 years on full pay, including three in the rank from which he retires, or, not having served such three years, shall have served ten in the colonies, or five with an army in the field in any rank, he may be allowed the higher rate of half pay.

A. Smith,
Director General,
Army Med. Dep.

July 1857.

APPENDIX VIII.

(*Furnished by Dr. A. Smith.*)

Return showing the Strength of Medical Officers on Full Pay on the 1st of April of each Year, from the 1st April 1839 to 31st March 1854, and the Deaths which have taken place among them in each of those Years.

Period.	Strength of Medical Officers on Full Pay.	Deaths during the Period.
1 April 1839 to 31st March 1840	496	24
1 „ 1840 to 31 „ 1841	501	15
1 „ 1841 to 31 „ 1842	508	15
1 „ 1842 to 31 „ 1843	533	30
1 „ 1843 to 31 „ 1844	546	23
1 „ 1844 to 31 „ 1845	524	16
1 „ 1845 to 31 „ 1846	540	13
1 „ 1846 to 31 „ 1847	538	17
1 „ 1847 to 31 „ 1848	579	12
1 „ 1848 to 31 „ 1849	568	17
1 „ 1849 to 31 „ 1850	573	16
1 „ 1850 to 31 „ 1851	566	20
1 „ 1851 to 31 „ 1852	559	20
1 „ 1852 to 31 „ 1853	563	17
1 „ 1853 to 31 „ 1854	566	22
Total	8,160	277
Ratio per 1000 of strength	-	33·95

APPENDIX IX.

(*Compiled from Returns furnished by Dr. A. Smith.*)

1.—Return showing the Mortality of the Medical Officers serving with the Army in the East from 1st May 1854 to 30th April 1856.

—	1st May 1854 to 30th April 1855.			1st May 1855 to 30th April 1856.			Total for Two Years.		
	Average Strength.	Total Deaths.	Ratio of Deaths per 1,000.	Average Strength.	Total Deaths.	Ratio of Deaths per 1,000.	Average Strength.	Total Deaths.	Annual Ratio of Deaths per 1,000 of Strength.
Medical Officers	266	35	131·6	415	11	26·5	681	46	67·5
Apothecaries, Dispensers and Dressers	28	1	35·7	75	4	53·3	103	5	48·5

2.—Return showing the Ranks of the Medical Officers who died on Service in the East, 1854–56.

—	1854–5.	1855–6.	Total.
Deputy Inspectors-General	1	1	2
Staff Surgeons, 1st class	7	—	7
„ „ 2nd class	1	2	3
Regimental Surgeons	6	1	7
„ Assistant-Surgeons	13	2	15
Staff Assistant-Surgeons	3	—	3
Acting Assistant-Surgeons	4	5	9
Apothecary to the Forces	1	—	1
Dispensers	—	2	2
Hospital Dressers	—	2	2

APPENDIX X.

(Compiled by the Secretary.)

I.—Return showing the Number of Medical Officers on Full Pay on 1st July 1857, distinguishing the Ranks and Length of Service.

	Above 30 years Service.	25 to 30	20 to 25.	15 to 20.	10 to 15.	5 to 10.	Under 5 years Service.	Total.
Inspectors-General	5	—	1	—	—	—	—	6
Deputy Inspectors-General	11	2	6	—	—	—	—	19
Surgeon-majors (guards)	1	—	1	1	—	—	—	3
Staff surgeons, 1st class	8	2	19	4	—	—	—	33
Senior surgeons (Artillery)	—	3	—	1	—	—	—	4
Regimental sur. Cavalry	—	—	4	9	14	6	—	33
Regimental sur. Artillery	—	1	2	5	6	2	—	16
Regimental sur. Infantry	1	1	7	45	51	17	—	122
Staff surgeons, 2d class	3	—	6	26	29	13	—	77
Assistant-surg. Cavalry	—	—	—	—	2	6	22	30
Assistant-surg. Artillery	—	—	—	—	2	7	30	39
Assistant-surg. Infantry	—	—	—	—	13	56	198	267
Assistant-surg. Staff	—	—	—	1	3	20	111	135
Acting assistant-surgeons	—	—	—	—	—	—	4	4
	29	9	46	92	120	127	365	788

II.—Distribution of the preceding establishment, according to the Ranks proposed by Mr. Alexander to the Commission.

	Above 30 years Service.	25 to 30.	20 to 25.	15 to 20.	10 to 15.	5 to 10.	Under 5 years Service.	Total.
Inspectors-General	7	—	1	—	—	—	—	8
Deputy Inspectors-General	18	2	6	—	—	—	—	26
Surgeon-majors	3	7	38	—	—	—	—	48
Surgeons	—	—	—	90	100	38	—	228
Assistant-surgeons	—	—	—	1	20	89	361	471
Surgeon-majors (guards)	1	—	1	1	—	—	—	3
Acting assistant-surgeons	—	—	—	—	—	—	4	4
	29	9	46	92	120	127	365	788

III.—Rates of Daily Pay of Medical Officers.

1. As authorized by present Warrant.

	Above 25 years Service.	Above 20 years Service.	Above 20 years Service.	Under 10 years Service.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Inspector-General	2 0 0	1 18 0	1 16 0	—
Deputy Inspector-General	1 10 0	1 8 0	1 4 0	—
Surgeon Major (Guards)	1 9 9	1 7 9	1 4 9	—
Staff surgeon (1st class) / Senior surgeon (Artillery)	1 4 0	1 2 0	0 19 0	—
Regimental surgeon / Staff surgeon (2d Class)	1 2 0	0 19 0	0 15 0	0 13 0
Assistant-surgeon (Cavalry)	-	-	0 11 0	0 8 6
Assistant-surgeon (Infantry)	-	-	0 10 0	0 7 6
Acting assistant-surgeon	-	-	-	0 10 0

2. As proposed by Dr. A. Smith to Mr. Stafford's Committee.

	Above 25 years Service.	Above 20 years Service.	Above 10 years Service.	On Appointment.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Inspector-General	3 0 0*	—	—	—
Deputy Inspector-General	2 0 0	1 10 0*	—	—
Staff surgeon (1st Class)	1 10 0	1 8 0	1 5 0*	—
Regimental surgeons / Staff surgeons (2d Class)	-	1 5 0	1 0 0	0 15 0
Assistant-surgeons	-	-	0 13 0	0 10 0

* Or on promotion, should these periods of service not be already completed.

3. As proposed by Mr. Alexander in his Evidence before the Commission.

	After 30 years Service.	After 25 years Service.	After 20 years Service.	After 15 years Service.	After 10 years Service.	After 5 years Service.	Under 5 years Service.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Inspector-General	2 5 0	2 5 0	2 0 0*	—	—	—	—
Deputy Inspector-General	1 14 0	1 10 0	1 8 0*	—	—	—	—
Surgeon-major	- -	1 5 0	1 2 0	—	—	—	—
Surgeon	- -	- -	- -	0 18 0	0 15 0	—	—
Assistant-surgeon	- -	- -	- -	—	0 13 0	0 11 6	0 10 0

* Or on promotion, should these periods of service not be already completed.

IV.—Table of the Rates of Half Pay of Medical Officers.

1.—Under the present Warrant.

(*a.*) *If placed on half-pay by reduction.*

—	After 30 years Service.	After 25 years Service.	After 20 years Service.	After 10 years Service.	Under 10 years Service.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Inspector-General	1 10 0	1 5 0	1 0 0	—	—
Deputy Inspector-General	1 0 0	0 17 0	0 14 0	0 10 6	0 8 0
Staff surgeon 1st class, and senior surgeon, R.A.	0 17 0	0 15 0	0 12 0	0 10 0	0 7 6
Regimental surgeon and 2nd class staff	0 15 0	0 13 0	0 11 0	0 8 6	0 6 0
Assistant-surgeon	0 7 6	0 7 0	0 6 0	0 5 0	0 4 0

(*b.*) *If placed on half-pay from any other cause, unless specially recommended by the Director-General for the preceding rates.*

—	After 30 years Service.	After 25 years Service.	After 20 years Service.	After 10 years Service.	Under 10 years Service.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Inspector-General	1 0 0	0 15 0	0 12 0	—	—
Deputy Inspector-General	0 18 0	0 14 0	0 10 0	0 8 0	0 7 0
Staff surgeon, 1st class, and senior surgeon, R.A.	0 16 0	0 13 0	0 9 6	0 7 6	0 6 6
Regimental surgeon and 2nd class staff	0 15 0	0 11 6	0 8 0	0 6 0	0 5 6
Assistant-surgeon	0 7 0	0 6 0	0 5 0	0 4 0	0 3 0

2. Rates proposed by Dr. A. Smith.

(*a.*) *If placed on half-pay by reduction or for ill health or wounds.*

—	After 25 years Service.	After 20 years Service.	After 10 years Service.	Under 10 years Service.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Inspector-General	2 5 0	2 5 0	—	—
Deputy Inspector-General	1 10 0	1 2 6	1 2 6	—
Staff surgeon 1st class, and senior surgeon, R.A.	1 2 6	1 1 0	0 18 9	—
Regimental surgeon and 2nd class staff	—	0 18 9	0 15 0	0 11 3
Assistant-surgeon	—	—	0 9 9	0 7 6

(*b.*) *If placed on half-pay at their own request.*

	After 25 years Service.	After 20 years Service.	After 10 years Service.	Under 10 years Service.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Inspector-General	2 2 0	1 10 0	1 10 0	—
Deputy Inspector-General	1 8 0	0 15 0	0 15 0	—
Staff surgeon first class and senior surgeon retired	1 1 0	0 14 0	0 12 6	—
Regimental and second class staff surgeon	- -	0 12 6	0 10 0	0 7 6
Assistant-surgeons	- -	- -	0 6 6	0 5 0

3. Rates proposed by Mr. Alexander.

(*a.*) *If placed on half-pay by reduction, or for ill health or wounds.*

	After 30 years Service.			After 25 years Service.			After 20 years Service.			After 15 years Service.			After 10 years Service.			After 5 years Service.			Under 5 years Service.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Inspector-General -	-		-	1	13	9	1	10	0		—			—			—			—	
Deputy Inspector-General - -	1	5	6	1	2	6	1	1	0		—			—			—			—	
Surgeon-major - -	-		-	0	18	9	0	16	6		—			—			—			—	
Surgeon - - -	-		-	-		-	-		-	0	13	6	0	11	3		—			—	
Assistant-surgeon -	-		-	-		-	-		-	-		-	0	9	9	0	8	7½	0	7	6

(*b.*) *If placed on half-pay at their own request.*

	After 30 years Service.			After 25 years Service.			After 20 years Service.			After 15 years Service.			After 10 years Service.			After 5 years Service.			Under 5 years Service.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Inspector General -	-		-	1	11	6	1	0	0		—			—			—			—	
Deputy Inspector-General - -	1	3	10	1	1	0	0	14	0		—			—			—			—	
Surgeon-major - -	-		-	0	17	6	0	11	0		—			—			—			—	
Surgeon - - -	-		-	-		-	-		-	0	9	0	0	7	6		—			—	
Assistant-surgeon -	-		-	-		-	-		-		—		0	6	6	0	5	9	0	5	0

APPENDIX XI.

Prepared from a Nominal Return furnished by the Paymaster-General.

TABLE showing the NUMBER of MEDICAL OFFICERS on HALF-PAY, on 1st April 1857, distinguishing the Ranks and the various Rates of Half-Pay.

Daily Rate of Half pay.	Hosp. Assistants.	Assist.-Surgeons.	Regimental and 2d class Staff-Surgeons.	Surgeons to the Forces.	Staff-Surgeons, 1st class.	Surgeon-Majors, (Guards.)	Physicians to the Forces.	Deputy Inspectors-General.	Inspectors-General.	Director-General.	Total at each rate.
£ s. d.											
0 2 0	2	3	1	–	–	–	–	–	–	–	6
0 3 0	–	16	1	–	–	–	–	–	–	–	17
0 4 0	–	28	–	–	–	–	–	–	–	–	28
0 5 0	–	1	–	–	–	–	–	–	–	–	1
0 5 6	–	–	2	–	–	–	–	–	–	–	2
0 6 0	–	–	24	–	–	–	–	–	–	–	24
0 7 0	–	1	20	9	–	–	–	–	–	–	30
0 8 0	–	–	4	–	–	–	–	–	–	–	4
0 8 6	–	–	6	–	–	–	–	–	–	–	6
0 9 0	–	–	–	2	–	–	–	–	–	–	2
0 9 6	–	–	–	–	1	–	–	–	–	–	1
0 10 0	–	–	9	2	14	–	4	–	–	–	29
0 11 6	–	–	5	2	–	–	–	–	–	–	7
0 12 0	–	–	–	2	–	–	–	–	–	–	2
0 12 6	–	–	–	–	3	–	–	2	–	–	5
0 13 0	–	–	26	–	–	–	–	–	–	–	26
0 14 0	–	–	–	–	–	–	–	2	–	–	2
0 15 0	–	–	44	1	7	–	–	2	–	–	54
0 16 0	–	–	–	2	1	–	–	–	–	–	3
0 17 0	–	–	–	–	19	–	–	1	–	–	20
0 17 6	–	–	–	–	–	2	–	–	–	–	2
1 0 0	–	–	–	–	–	–	–	10	5	–	15
1 1 1	–	–	–	–	–	5	–	–	–	–	5
1 4 0	–	–	–	–	–	–	–	1	–	–	1
1 10 0	–	–	–	–	–	–	–	–	16	–	16
1 17 11	–	–	–	–	–	–	–	–	3	–	3
£2,000 a year -	–	–	–	–	–	–	–	–	–	1	1
Total of each Rank	2	49	142	20	45	7	4	18	24	1	312

APPENDIX XII.

(Furnished by the India Board.)

RETURNS relative to the MEDICAL DEPARTMENT of the EAST INDIA COMPANY.

1. RETURN showing the NUMBER of ASSISTANT-SURGEONS who have entered the Service in each Year, from 1848 to 1852, both inclusive.

	Number.
1848	38
1849	24
1850	26
1851	23
1852	48

2. NUMBER of MEDICAL OFFICERS on FULL-PAY on the 1st April 1857, distinguishing the various Grades.

Members of medical board	9
Superintending surgeons	27
Surgeons	235
Assistant-surgeons	597
Total	868

3. NUMBER of MEDICAL OFFICERS on RETIRED PAY on the 1st April 1857, distinguishing the various grades.

	Bengal.	Madras.	Bombay.
Physician-general, surgeon-general, or member of the medical board	6	4	21
Superintending surgeons	3	10	5
Senior surgeons	5	—	—
Surgeons	120	60	26
Assistant-surgeons	14	9	1
	148	83	53
	284		

4. A TABULAR STATEMENT of the DAILY RATES of FULL PAY and RETIRED PAY, in English Money, of the various Grades of Medical Officers, and of any Increase granted on the Completion of certain Periods of Service.

Daily rates of full-pay, exclusive of Indian allowances :—

Surgeon	10*s.* 6*d.*
Assistant-surgeon	6*s.* 6*d.*

Rates of retired full pay :—

	Per diem.	Per annum.
Surgeon	10*s.* 6*d.*	£191
Assistant-surgeon	6*s.* 6*d.*	118

Increased pensions granted on the completion of certain periods of service :—

	£
After 21 years' service in India	250 per annum.
25 ditto	300 „
29 ditto	365 „
32 ditto	500 „
35 ditto	700 „

The full time of service must be completed in each case, but leaves of absence in India or Europe or elsewhere are allowed to count as service to the extent of—

1 year and 8 months	in 17 years' service.
2 years	in 20 „
3 years	in 25 „
4 years	in 30 „

East India House,
1st July 1857.

APPENDIX XIII.

(Given in by Dr. Balfour.)

MEMORANDUM relative to the PAY of ARMY MEDICAL OFFICERS.

IN 1557 the pay of the army surgeon was 1*s.* per diem, and one was attached to each company, which usually consisted of 100 to 120 men.

In 1620 a surgeon-major to the camp was appointed, with a pay of 5*s.* per diem, and he had two "mates" under him, who each received 4*s.* a day. In addition to the company surgeons already noticed, who at this period were paid, in cavalry regiments, 2*s.* 6*d.*, and in infantry, 1*s.* per diem, each regiment, then about 2,000 strong, had a head surgeon, whose pay was 4*s.* a day.

In 1655 the company surgeons were abolished, and a mate was appointed to each infantry regiment at the daily pay of 2*s.* 6*d.* At the same time 2*s.* a day in addition to his pay was granted to the cavalry surgeon to enable him to keep his horse.

In 1759 the pay of the surgeon's mate was raised to 3*s.* 6*d.*

In 1796 the rank was replaced in regiments by that of assistant-surgeon, with a daily pay of 5*s.* in time of peace, and 7*s.* 6*d.* during war; but hospital mates continued to be appointed to the staff till 1813, their pay being increased in 1804 to 6*s.* 6*d.* at home, and 7*s.* 6*d.* abroad.

Prior to 1783, each officer and soldier paid to the surgeon of the regiment a small sum annually, under the title of "medicine money," with which to purchase the medicines he required. In ordinary seasons the surgeon saved from 50*l.* to 70*l.* out of this fund, which increased his pay to about 8*s.* per diem. In 1783 government abolished this stoppage from the soldiers' pay, and granted an allowance to each regiment, varying in amount from 70*l.* to 120*l.* per annum. In 1797 this was discontinued, and to compensate him for the loss, the surgeon's pay was fixed at 11*s.* 4*d.* in cavalry, and 9*s.* 4*d.* in infantry.

In 1804 the Department was remodelled, and established by Royal Warrant as follows :—

Ranks.	Daily Pay.	Daily Half-pay.	
	£ *s.* *d.*	£ *s.* *d.*	
Hospital mate, at home	0 6 6	0 2 0	
„ „ abroad	0 7 6		
Assistant-surgeon, cavalry.	0 8 6	0 3 0	The additional 1*s.* to the cavalry officer to cover expense of keeping a horse.
Assistant-surgeon, infantry.	0 7 6		
Apothecary, and surgeon of recruiting district.	0 10 0	0 5 0	
Regimental surgeon	0 11 4	0 6 0	

Ranks.	Daily Pay.	Daily Half Pay.	
	£ s. d.	£ s. d.	
Regimental surgeon, after 7 years' service as surgeon, or 10 in the army.	0 14 1	0 6 0	
Regimental surgeon, after 20 years in the army.	0 18 10	0 6 0	
Regimental surgeon, if obliged to retire from bad health after 20 years.	„	0 10 0	
Regimental surgeon, after 30 years' service.	„	0 15 0	Entitled to retire even if in good health.
Surgeon to the forces -	0 15 0	0 6 0	After 20 and 30 years' service surgeons to the forces had the same increased rate of pay as regimental surgeons.
Physician to the forces -	1 0 0	0 10 0	
Deputy inspector-general of hospitals.	1 5 0	0 12 6	
Deputy inspector-general of hospitals, after 20 years' service.	1 10 0	0 15 0	
Inspector-general of hospitals.	2 0 0	1 0 0	
Principal inspector -	2 0 0	0 0 0	Members of the Medical Board.
Surgeon-general - -	2 0 0	0 0 0	
Physician-general -	2 0 0	0 0 0	

In 1813 hospital mates were abolished, being replaced by hospital assistants, who received the same rates of pay, but were commissioned by the King instead of being appointed by Warrant. In 1830 these were made assistant-surgeons to the forces, the rank of apothecary to the forces was prospectively abolished, and that of assistant-inspector of hospitals replaced the physicians to the forces. An increase of pay, after certain periods of service, was also granted, which fixed the rates, with a few exceptions, at their present amounts.

In 1840 the grade of assistant-inspector of hospitals was discontinued, and the pay and allowances of staff surgeons increased to the amount of the abolished rank. The grade of staff surgeons of the second class, with the same rank and pay as regimental surgeons, was established. These changes were made in terms of the recommendation of a Royal Commission.

The Royal Warrants of 1st and 14th October 1840, confirmed by that of 6th October 1854, established the present rates of pay and half-pay, as follows :—

Ranks.	Rates of Daily Pay.	Rates of half-pay if placed thereon owing to		Before being eligible for promotion must have served
		Reduction of the Establishment.	Any other Cause.	
	£ s. d.	£ s. d	£ s. d.	
Assistant-surgeon, under 10 years' actual service - - - -	0 7 6	0 4 0	0 3 0	5 years on full-pay.
Ditto after 10 but under 20 ditto	0 10 0	0 5 0	0 4 0	
Ditto after 20 but under 25 ditto	0 10 0	0 6 0	0 5 0	
Ditto after 25 but under 30 ditto	0 10 0	0 7 0	0 6 0	
Ditto after 30 years' service on full-pay - - - - - -	0 10 0	0 7 6	0 7 0	
Regimental surgeon and staff surgeon, 2nd class, under 10 years' service on full-pay - -	0 13 0	0 6 0	0 5 6	10 years in the army on full-pay.
Ditto do. after 10 but under 20 do.	0 15 0	0 8 6	0 6 0	
Ditto do. after 20 but under 25 do.	0 19 0	0 11 0	0 8 0	
Ditto do. after 25 but under 30 do.	1 2 0	0 13 0	0 11 6	
Ditto do. after 30 years' - - -	1 2 0	0 15 0	0 15 0	
Staff-surgeon, 1st class, under 10 years' actual service - - -	..	0 7 6	0 6 6	3 years at home or 2 abroad in this rank.
Ditto after 10 but under 20 ditto	0 19 0	0 10 0	0 7 6	
Ditto after 20 but under 25 ditto	1 2 0	0 12 6	0 9 6	
Ditto after 25 but under 30 ditto	1 4 0	0 15 0	0 13 0	
Ditto after 30 years on full pay -	1 4 0	0 17 0	0 16 0	
Deputy inspector-general of hospitals - - - - - - -	..	0 8 0	0 7 0	
Ditto after 10 but under 20 years' service - - - - - -	1 4 0	0 10 6	0 8 0	5 years at home or 3 abroad in this rank.
Ditto after 20 but under 25 ditto	1 8 0	0 14 0	0 10 0	
Ditto after 25 but under 30 ditto	1 10 0	0 17 0	0 14 0	
Ditto after 30 years' service on full-pay - - - - - - -	1 10 0	1 0 0	0 18 0	
Inspector-general of hospitals after 10 but under 20 years' service - - - - - -	1 16 0	..	..	
Ditto after 20 but under 25 ditto	1 18 0	1 0 0	0 12 0	
Ditto after 25 but under 30 ditto	2 0 0	1 5 0	0 15 0	
Ditto after 30 years' service on full-pay - - - - - -	2 0 0	1 10 0	1 0 0	

Note.—Every medical officer has the right to retire upon the half-pay after 25 years' actual service, and may be recommended for the rate assigned to his rank and services if he had been placed on half-pay by reduction of the establishment, provided he shall have served three years in the rank from which he retires.

By Royal Warrant, dated 23rd October, 1854, the rank of Apothecary to the Forces has been re-established, with the following scale of pay :—

	On Appointment.	After 5 Years' Service.	After 10 Years.	After 15 Years.	After 20 Years.	After 25 Years.	After 30 Years.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Full-pay -	9 0	10 6	12 0	13 6	15 0	16 6	18 0
Half-pay -	..	..	5 0	6 0	7 0	8 0	9 0

APPENDIX XIV.

(Given in by Mr. Martin.)

COPIES of CORRESPONDENCE from the GOVERNING BODIES of the UNIVERSITIES and ROYAL COLLEGES of PHYSICIANS and SURGEONS of England, Ireland, and Scotland, relative to the Insufficiency of the present Position, Pay, and Retirement of the Medical Officers of the Army, as communicated to the Right Honourable the Secretary of State for War, in Memorials from the above-mentioned Bodies.

Royal College of Surgeons of England.

At a quarterly meeting of the council of the Royal College of Surgeons of England, on the 8th of April 1857,

The council having taken into further consideration the memorial from certain medical officers of the army on the subject of their position and pecuniary advantages, laid before the council at their last meeting; and having also taken into consideration Mr. Tufnell's letter of the 19th ultimo,—

Resolved—That without presuming to doubt the justness of the decision which the commission appointed to consider such claims may come to, this council deem it their imperative duty to request the attention of the Right Hon. the Secretary for War to the claims of the medical officers of the army to a position and remuneration more commensurate with their position as men of scientific acquirements, and the importance of their services to the country.

And this council are induced to urge such claims upon the favourable consideration of Her Majesty's Government, not alone as due to the members of this and the other medical colleges of the United Kingdom, but also as the only means of obtaining for the

medieal department of the army the services of those best qualified to render that prompt and efficient aid which the exigencies of the serviee so constantly require.

(Signed) Edmd. Belfour, Secretary.

To the Right Hon. Lord Panmure,
Secretary of State for War.

Royal College of Surgeons of Edinburgh.

Unto the Right Honourable the Secretary of State for War.

The memorial of the Royal College of Surgeons of Edinburgh,

Sheweth,

That it is of the utmost importance to maintain the medical department of the army in a high state of efficiency.

That your memorialists have long entertained the conviction that the position of medical officers in the army is not such as their professional claims entitle them to; and that their pay and other pecuniary advantages, during service and upon retirement, form an inadequate remuneration for the important duties which they are called upon to discharge to the public.

That such being the case, the Army Medical Department does not, in point of fact, offer sufficient inducements to the most highly-educated and talented young members of the profession, but, on the contrary, that its regulations are such as positively to deter such persons from entering it.

That in order to place this most valuable branch of the service upon a proper footing, your memorialists are of opinion that it is most desirable to raise the position of medical officers in the army, by assigning to them, after a short period of service, a higher regimental rank than they have hitherto enjoyed, along with corresponding advantages as regards choice of quarters, and in other respects; to make a considerable increase to their allowances; and also to make provision for their being allowed to retire from the service after a fixed period, upon full pay.

That your memorialists respectfully but earnestly recommend the subject to the serious consideration of Her Majesty's Government, in the hope that they will see it right to recognize what appear to your memorialists to be the just claims of a most meritorious class of her Majesty's servants.

In name, &c.
John Scott, Secretary,
R.C.S., Edin.

Royal College of Surgeons of Dublin.

Extract from the minutes of a Meeting of Council, held on the 30th January 1857.

Resolved—That the council of this college, being aware that the question of amelioration of the Army Medical Department is now before the Government, and having had the subject of the pay and position of the army surgeons brought before them, and having given to that subject their fullest consideration, they beg leave to express it as their decided opinion, that they regard the position of the medical officers of the army as incommensurate with their professional claims.

And this council consider further that the pay and emoluments of these officers, during service and on retirement, are beneath those which they are justly entitled to receive, considering their high professional qualifications, and the duties which they discharge to the public.

And that this resolution be transmitted to the Secretary of State for War.

Royal College of Physicians, Edinburgh.

Resolutions adopted by the Royal College of Physicians of Edinburgh, at the meeting of the college, held at Edinburgh on 3d February 1857.

First.—That it is desirable and important that such inducements should be held out in connection with the medical department of the army, as would attract men of talent and acquirements to adopt this department of the public service for their professional life.

Second.—That with this view, considering the high standard of education required, the anxious responsibilities involved, and the risks of climate, pestilence, and war to which they are exposed, the present pay of surgeons and assistant-surgeons is altogether inadequate, and less than that which may be obtained by practising as medical men, even in comparative obscurity.

Third.—That the efficiency of this branch of the service will be promoted by a higher rate of pay from the first; by a regular increase in emoluments, and improvements in status, regulated by length of service and special duties; and by arrangements as to terms of service and retiring allowances, such as might encourage men of promise and high education to enter the service and to continue in it.

Fourth.—That considering the valuable services which, by universal acknowledgment, were rendered by the medical officers during the late campaign, their self-sacrifice, moral courage, and devotion to their arduous duties, under trying circumstances, the present seems a suitable opportunity for the recognition of the claims of this important branch of the service to higher status and emoluments.

Fifth.—That these resolutions be communicated to the Right Honourable Lord Panmure, Secretary-at-War, with a respectful but earnest recommendation that the subject to which they refer may receive his Lordship's favourable consideration.

Excerpted from the minutes of the Royal College of Physicians in Edinburgh.

Chr. Douglas, Clerk.

King and Queen's College of Physicians, Dublin.

At a meeting of the King and Queen's College of Physicians in Ireland, held on Friday, January 30, 1857,

The president and fellows, having had under their consideration the case of the medical officers of the army, it was

Resolved—That the college are of opinion, that the position, amount of pay, and conditions for retirement of the medical officers of the army, offer inadequate remuneration for the responsible nature of the duties they are required to discharge, and insufficient return for the labour and expense entailed upon them, as students, in acquiring a thorough knowledge of the profession.

Resolved—That considering the many advantageous appointments now open, by competitive examination, to students in other departments of the public service, the college are also of opinion that the position, pay, and conditions for retirement of the army medical officers are insufficient to induce the most highly qualified students to seek admission for the future into Her Majesty's service.

Resolved—That for the reasons stated in the foregoing resolutions, the college are of opinion that the relative rank of the medical officers of the army should be raised; their pay increased; that a reasonable period of service should entitle them to retirement upon full pay; that it should be open to them to receive military honours for distinguished service; and that they should be entitled to all advantages enjoyed by other officers of corresponding rank in Her Majesty's service.

W. Edw. Steele, Registrar.

University of Dublin.

The professors have considered "the memorial" on the part of the medical officers of the army; also some portions of "the evidence" adduced in its support, furnished by those persons whose rank and experience render them most competent to form a correct judgment on the subject.

There can be no doubt that the "medical" forms a very important branch of the military service, and that the duties of the surgeon and assistant are of an arduous nature, both at home and abroad; and that it is of the utmost importance to the public, that these duties should be ably and efficiently performed in times of *peace* as well as of *war*.

The education of the medical officer ought therefore to be of a very high order, and, of necessity, protracted and expensive.

The existing regulations of the service do not appear to the professors to hold out sufficient encouragement, either by present or prospective remuneration and rank, to induce students of the highest order, as to education and attainments, to seek for those appointments; and the professors are aware, that of late years many of that class of students have preferred the service of the E. I. Company, notwithstanding the searching competitive examination, merely because the conditions of that service, as to pay and superannuation, are on a more liberal scale than in Her Majesty's forces.

The professors fully concur in the prayer of "the memorial," and are of opinion that, in order to secure to the public a constant succession of a highly educated class of medical officers, their remuneration ought to be increased, their relative rank in the army improved, their retirement permitted at an earlier period, and their retiring allowance augmented.

The professors are also of opinion, that should these views be adopted, not only would the position of the medical officers be substantially improved, but also the public service benefited and medical science advanced, and that a higher and better educated class of candidates would anxiously seek for those appointments, and be found prepared to stand competitive examinations, in the event of "the Director-General" instituting these as a necessary test of qualification for entering the service.

(Signed) Robert Harrison,
James Apjohn, Prof. Chemistry.
Robert W. Smith.
William Stokes, Reg. Prof.
J. W. Cusack, Prof. Surgery.
W. H. Harvey, Prof. Botany.

University of Edinburgh.

Unto the Right Honourable the Secretary of State for War.

The Memorial of the Senatus Academicus of the University of Edinburgh,

Humbly sheweth—

That the efficiency of the medical department of the army is a matter of high national importance.

That the present position of the medical officers of the army is not commensurate with their professional claims; and their pay and other allowances during service and upon retirement, do not give adequate remuneration for the responsible public duties which they are called on to perform.

That on these accounts the medical department of the army does not offer sufficient inducements to secure the services of the most able and highly educated of the junior members of the profession.

That with a view of placing this important department of the service on a more satisfactory footing, the memorialists are fully persuaded that it is desirable to raise the status of the medical officers of the army, by giving them a higher regimental rank after a limited period of service, by conferring advantages in such matters as the choice of quarters, by increasing their allowances, and by permitting them to retire, after a fixed period, on full pay.

That the memorialists respectfully but earnestly venture to bring this subject under the serious consideration of Her Majesty's Government, in the hope that measures will be immediately taken for remedying the existing discouragements and grievances, and for doing ample justice to the claims of a most deserving class of Her Majesty's servants.

And the memorialists will ever pray.

Signed in name and by the authority of the Senatus Academicus of the University of Edinburgh, this 4th day of February 1857.

(Signed) John Lee, D.D., Principal.

University of Glasgow.

At a meeting of the University of Glasgow, held on Monday, March 9th, *inter alia*,

Dr. Easton reported that the medical faculty had taken into consideration the petition from medical officers in the army, referred to them by the Senate at last meeting, and are of opinion that the allegations in said petition were well founded.

Thereupon the Senate, having considered the petition and report, agreed to express it as their opinion, that the present pay, position, and retiring allowance of the medical officers of the army are insufficient, and unlikely to secure for the country, in future, the services of the best men; and instructed their clerk to communicate this expression of their opinion to the petitioners.

Extracted from the minutes of Senate by

Duncan H. Weir, M.A.,
Clerk of Senate.

Faculty of Physicians and Surgeons, Glasgow.

To the Right Hon. Lord Panmure, Secretary-of-War.

My Lord,—

The faculty of physicians and surgeons of Glasgow having received a memorial from a large body of medical officers of the army, requesting the faculty in their corporate capacity, and as guardians of the interests of their licentiates, to express to Her Majesty's Government, through your lordship, their deliberate opinion whether the position of said memorialists, in reference to status, pay, and retirement, is sufficient and likely to secure and retain the services of the best men; and the faculty having taken the said memorial into consideration, and for reasons founded on the nature and value of the services of the memorialists, are of opinion that the position of the medical officers of the army, in reference to status, pay, and retirement, is unsatisfactory, and ought to be improved. And while the faculty would most respectfully urge upon the government, through your lordship, the propriety of raising the status of the army surgeons, they also deem it essential to the full and permanent efficiency of the medical department of the service, that the path to honours be made at least equally accessible to the medical as to the military officer.

I have, &c.

(Signed) Robert Hunter,
President.

Marischal College, Aberdeen.

The Memorial of the Principal and Professors of Marischal College and University of Aberdeen to the Right Honourable the Lord Panmure, G.C.B., Secretary of State for War, &c., &c.

Humbly sheweth—

That the memorialists consider the present remuneration and prospects of army medical officers

are insufficient for the valuable services rendered to the state by that class of public servants, and not calculated to induce the best class of alumni to seek for employment in the medical department of the army. The memorialists therefore respectfully appeal to your lordship to be pleased to adopt such measures as to your lordship may seem most calculated to procure for army medical officers,—

1st. Increased rank and pay to surgeons and assistant-surgeons;

2nd. The right of earlier retirement; and,

3rd. Increased retiring allowance to all grades.

And your memorialists, as in duty bound, will ever pray, &c., &c.

(Signed) D. Dewar,
Principal.

King's College, Aberdeen.

King's College, Aberdeen,
3rd March 1857.

Sir,—

I regret to say that the copy which was retained of the memorial of the senators of the University to the Minister of War, on behalf of the medical officers of the army, has unfortunately been mislaid. I will, however, forward it to you if it should be found.

In the meantime it may be sufficient to state, that adverting to the fact that a number of efficient and distinguished medical officers have received their preliminary as well as professional education at this institution, as a peculiar reason for the interest felt by us in the subject, we strongly urge the adoption of the suggestions of the parliamentary committee, and the immediate improvement of the condition of the medical officers, as regards pay, position, and retirement.

Yours very faithfully,
P. C. Campbell.

APPENDIX XV.

Paper relative to the Grouping of Stations for the Purpose of Promotion.

(*Given in by Dr. Smith.*)

When a regimental surgeon or staff surgeon of the second class died in either of the following commands, viz., the United Kingdom, Jamaica, Windward and Leeward Islands, Ceylon, Hongkong, or India, the senior assistant-surgeon in the command was, except under special circumstances, considered entitled, if in good health, to promotion; and a like practice was observed in the following groups of commands, viz., Mediterranean group, consisting of Gibraltar, Malta, and the Ionian Islands—American group, consisting of Canada, Nova Scotia, and Bermuda—Cape of Good Hope group, consisting of Cape of Good Hope and the Mauritius—and the Australian group, consisting of New Zealand, New South Wales, and Van Diemen's Land.

If death vacancies are to be filled up, as formerly, by the promotion of the senior assistant-surgeon in a command, or a group of commands, such may be done either by observing the existing plan or by instituting two large groups—the one to consist of the Cape of Good Hope and all the stations eastward of it; the other, all to the westward of the Cape.

If these two divisions be adopted, the assistant-surgeons serving in India, Hongkong, and Ceylon, will doubtless consider themselves unfairly treated, as they generally suffer more from disease than those who serve in the other commands of the district.

APPENDIX XVI.

(*Prepared by the Secretary.*)

1. Nominal Return of the Regimental and Second-Class Staff Surgeons on Full Pay on 1st July 1857, having less than Ten Years' Full Pay Service (exclusive of Household Brigade).

Cavalry	2nd Dragoons,	J. H. Llewelyn	entered	17 Mar.	1848,	promoted	9 Feb. 1855.
	12th Lancers,	G. A. Turnbull,	„	16 Aug.	1850,	„	28 Dec. —
Royal Artillery		W. Perry,	„	23 Oct.	1849,	„	20 July —
		P. S. Warren,	„	10 Aug.	1848,	„	20 July —
Military Train		J. A. Woolfreyes,	„	13 July	1847,	„	20 July —
		A. McArthur,	„	13 Apr.	1849,	„	11 May —
Infantry	4th Regiment,	J. Gorringe,	„	18 June	1849,	„	29 June —
	13th „	P. H. E. Cross,	„	3 April	—	„	15 May —
	18th „	T. Crawford,	„	18 Feb.	1848,	„	9 Feb. —
	22nd „	A. L. Adams,	„	1 Dec.	—	„	25 Sept. —
	26th „	J. Coates,	„	2 Apr.	1850,	„	25 Jan. 1856.
	42nd „	J. S. Furlong,	„	19 Nov.	1847,	„	9 Feb. 1855.
	49th „	J. H. Bews,	„	22 Dec.	1848,	„	1 May —
	50th „	Jas. Crerar,	„	3 Sept.	1847,	„	9 Apr. —
	63rd „	H. Crisp,	„	3 Nov.	1848,	„	22 June —
	66th „	D. Hanley,	„	20 July	1847,	„	16 Feb. —
	68th „	T. C. O'Leary,	„	6 Aug.	—	„	9 Feb. —
	77th „	E. F. Franklyn,	„	19 Oct.	1849,	„	15 May —
	90th „	A. D. Home,	„	17 Mar.	1848,	„	9 Feb. —
	94th „	A. A. Stoney,		£2 Dec.	—	„	11 May —
	98th „	N. H. Stewart,		1 Dec.	—	„	22 June —

Colonial Corps - -	1st W.I. Regt.	W. F. Daniel,	- entered	26 Nov. 1847,	promoted	11 Mar. 1853.
	Gold Ct. Crps.	P. H. Roe,	- „	3 Sept. —	„	27 May —
Staff - - - - -		C. R. Robinson,	- „	16 Nov. —	„	1 May 1855.
		G. Hyde,	- „	8 Dec. 1848,	„	1 May —
		W. J. Fyffe,	- „	8 Dec. —	„	1 May —
		P. J. Clarke,	- „	17 Mar. —	„	11 May —
		J. C. Haverty,	- „	27 Apr. 1849,	„	29 June —
		Thomas Rhys,	- „	3 July 1848,	„	20 July —
		W. R. Thompson,	- „	30 Nov. —	„	14 Sept. —
		James Fraser,	- „	20 Oct. —	„	25 Sept. —
		W. W. Somerville,	- „	22 Dec. —	„	8 Jan. 1856.
		R. E. Fitzgibbon,	- „	10 Jan. 1851,	„	22 July —
		T. Ligertwood,	- „	14 Nov. —	„	20 Oct. —
		J. Hendley,	- „	14 Mar. —	„	5 Dec. —

SUMMARY, showing the Length of Service on Promotion.

Above 5 and under 6 years' service - - - -	1	
„ 6 „ 7 „ „ - - - -	6	1st West India Regiment and Gold Coast Corps not included.
„ 7 „ 8 „ „ - - - -	18	
„ 8 „ 9 „ „ - - - -	7	
„ 9 „ 10 „ „ - - - -	1	
	33	

2. NOMINAL RETURN of ASSISTANT-SURGEONS having upwards of Ten Years' Full-Pay Service (exclusive of Household Brigade).

Cavalry - - -	9th Lancers,	J. J. Clifford,	- 7 August	1846.
Royal Artillery -		E. D. Allinson,	- 27 May	1847.
		H. Fisher,	- 7 June	—
Infantry -	8th Regiment,	R. Domenichetti,	- 3 April	1846.
	32nd „	A. P. Cahill,	- 3 April	—
	37th „	J. W. Fleming,	- 27 October	—
	43rd „	J. Madden,	- 2 October	—
	53rd „	J. S. Grant,	- 25 September	—
	58th „	A. G. Montgomery,	- 9 December	1845.
	60th „	B. Nicholson,	- 25 September	1846.
	65th „	T. E. White,	- 26 September	1845.
	74th „	W. Lapsley,	- 7 August	1846.
	84th „	J. T. La Presle,	- 22 December	—
Colonial - - -	C.M.R. „	W. Singleton,	- 10 July	—

Summary.

Above 10 but under 11 years' service - - - -	10
„ 11 „ 12 „ „ - - - -	4
Total - - -	14

1st July 1857.

APPENDIX XVII.

(*Furnished by the India Board.*)

MINUTE by the Most Noble the GOVERNOR-GENERAL, concurred in by His Excellency General the Honourable G. ANSON, Commander-in-Chief.

The Indian Medical Service. (s[d]) D.

1. There still remain departments in the several branches of administration, which I should have been glad to have had time to revise and amend before resigning the government of India. But the constant pressure of business requiring immediate attention has rendered it impossible for me to find time for everything; and the near approach of the day of my departure almost forbids any further attempts to propose reforms. There is, however, one department which calls for improvement so loudly, which calls for it so justly, which is so easily susceptible of full improvement, which is so worthy of it, and will so promptly and amply repay it, that I cannot be content to leave India without submitting my views regarding that portion of the service to the Honourable Court, and earnestly soliciting their favourable consideration of what I shall propose. I allude to the medical department of the three presidencies.

2. It is impossible for me now to work out the subject in its lesser details; indeed, it is inexpedient that I should attempt to do so. It is far preferable that those details should be left to the management of the government hereafter, if the Honourable Court should be pleased to approve of the general outline of what I am about to propose. It is that general outline only which I now desire to submit.

3. The Indian medical service has been the subject of inquiry, discussion, and representation for many years past. The Honourable Court have full information at their command regarding its condition, its deficiencies, and all the various means of improving

the one and repairing the other. The records of inquiries held in this country by direction of the Government of India, the evidence which has been given before committees of Parliament, and the numerous memorials which have from time to time been presented to the Honourable Court by members of the medical service of name and note in the several presidencies, all furnish a body of important facts which cannot be controverted, and have never even been disputed.

It is therefore unnecessary for me to burden this minute by setting forth in it facts which are already so fully on record, and which will at once be present to the memory of the Honourable Court, and familiar to it on my referring to them.

4. The first great fault in the organization of the Indian medical service, the beginning, middle, and end of its imperfections, is the vicious principle on which the direction and control of the department is based. It is governed by a board consisting of three members, those three members having been systematically the three oldest officers on the medical list. Recently the Honourable Court permitted a modification of this system of rigid seniority to be made, so far as to allow that one of the three members should be appointed by selection. When I proceeded to act on this permission I met with the utmost opposition, and although I selected a medical officer of the most eminent ability, of distinguished service, and, moreover, among the three seniors of the superintending surgeons, I was compelled to insist upon his appointment before I could overcome the resistance which, by repeated remonstrance and representation on behalf of the two seniors, was made to the measure from army head-quarters.

5. When the medical service has been for so long subjected to the government of a board, when that board has been uninterruptedly filled by a rigid system of seniority, and when that system of seniority has been thus inflexibly sustained by the military authorities and countenanced by the government, the Honourable Court can have no doubt of the ill effects which must have ensued.

6. I say that the Honourable Court can have no doubt of the ill effects which must have ensued from such an organization, because the Honourable Court have already recognized the viciousness of the principle on which it is based, in the case of another controlling authority of a similar constitution, viz., the Military Board. That board was not in its constitution so radically bad as the Medical Board, because it had not been filled like the latter in all its grades by absolute seniority. But it was largely subject to objections of the same character. The Honourable Court acknowledged the inherent faultiness of its constitution. They even outstripped me in proposals for reserving different departments from its influence, which I had made gradually and cautiously, in order that alarm might not be created by any appearance of wholesale innovation. Finally, the Honourable Court readily consented last year to the total abolition of the Military Board.

7. I strongly recommend, and earnestly hope, that the Honourable Court will in like manner consent to the total abolition of the Medical Board.

8. The one true, right, sound principle for the government of the medical service in India, is that which the Court have permitted the government of India to act upon, in providing a substitute for the collective control of the Military Board, namely, unity of authority coupled with direct responsibility.

9. Let this principle be strictly observed in framing the direction of the department, let the principle which is to govern all other appointments in it be, not succession but selection ; let the responsibility of causing effect to be given to these two principles, be placed not indirectly, as it is at present, but directly upon the shoulders of the government ; and I will answer for it, that the medical service of the East India Company will be surpassed by none in the world, either in its civil or military branch.

10. Already in many respects the India medical service is superior to the Royal service, especially in the organization of the inferior grades. There have already been found in its ranks many men of the highest capacity and value, who elsewhere would have won an European reputation ; on the other hand, there have too often been tolerated in it many who were dolts, sluggards, or reprobates ; but if the directing authority of the department were what it ought to be, the number of those who do it honour would be still more increased, while it would become the fault of the Government itself if those who are a reproach to the department should continue to discredit it.

11. I therefore advise that the Medical Board at the several Presidencies should be abolished, and that in each Presidency the entire direction and control of the Medical Department, subject to the authority of the Government, should be vested in a Director-General.

12. I recommend that the Director-General should be selected by the Government from among the superintendent-surgeons or staff-surgeons, who will be mentioned hereafter ; that his tour of duty should be for five years, renewable by the Government if it should think proper, and that his salary should be 3,500 rupees per mensem.

The Director-General should perform all the duties which the Medical Board is now expected to perform, and he should have the services of a secretary.

13. The extent of the Bengal Presidency is now so great, the new provinces subsidiary to it are so numerous, and still increasing, and the civil and military establishments connected with it are so immense, that the Director-General would be unable to perform the onerous functions of his office unless he had either a very large and costly establishment, or assistance of a high class, immediately subordinate to his office.

As the more effective measure, and also in order that the opportunities of advancement and reward for medical officers, which are already much curtailed, should not be unduly diminished, I would advise that two officers be appointed under the Director-General, one to be the Inspector-General of military hospitals, and the other to be the Inspector-General of civil hospitals and dispensaries.

The names of these officers indicate their respective duties. Their salary should be 2,500 rupees, two thousand five hundred per mensem. They should each have an assistant or secretary. They should be liable to be deputed on special duty by the Director-General, and his place should be taken by one of them if he should be temporarily absent.

14. The superintending surgeons should correspond with the Inspector-General, and they with the Director-General, but all ultimate decision and responsibility within the department will rest with the Director-General. Present members of the Medical Board who may not be employed as Director-General or as Inspector-General, should be allowed to retire, retaining their allowances for as long as their tour in the Board would have lasted.

15. The next grade in the department should be, as at present, the superintending surgeon.

The office is an efficient part of the system, if it be filled by efficient men. But the promotion to it, as to the Medical Board, has been hitherto regulated by the recommendations of the Commander-in-Chief, proceeding invariably and exclusively on strict seniority.

It is manifestly impossible that the twelve senior officers on the medical list next after the members of the Board can be the twelve fittest men for the performance of the important and responsible duty of superintending the whole executive of the department. It is notorious that although some are, the superintending surgeons as a body are not the fittest men to superintend others, and thereby at once to protect the interests of the Government, and to promote the welfare of the community—yet they ought to be so.

The only means by which the Honourable Court can insure that they shall be so, is by directing that the appointment to the office of superintending surgeon

shall in all cases be by selection of the fittest man for each vacancy that may occur.

I beg to recommend that the Honourable Court should issue such instructions accordingly.

16. The substitution of the twelve best men in the medical service for the twelve oldest men, next after the Director and Inspector General, as superintending surgeons, will have a great and wholesome effect. But it will still leave a deficiency to be supplied.

The superintending surgeon cannot, unassisted, perform fully the duties that belong to his office, even if he be thoroughly efficient. The proper discharge of those duties, which require his almost constant presence at divisional head-quarters, is incompatible with those frequent inspections of all his stations, in which consists the very essence of superintendence.

17. The consequence now is, that in most circles the duty cannot be said to be done at all; where it is done, the duty left at head-quarters is naturally neglected by the senior officer into whose hands it falls, and who gets neither credit nor advancement nor emolument by it.

18. The consequence hereafter will be, when efficient superintending surgeons shall be appointed, that the duty generally will be vastly better done, but it must still be imperfectly done either at head-quarters or in the mofussil.

19. To remedy this deficiency, I beg to advise that a new grade of medical officers should be created, who should be called "staff surgeons." In number there should be one for each circle in which there is a superintending surgeon, and one for general duties at the presidency.

Their salary should be 1,000 rupees, one thousand a month; they should be appointed by selection from among officers of the rank of surgeons. They should do the duties of superintending surgeon if that officer leaves head-quarters; they should do his duties in the mofussil if he should depute them for that purpose.

20. The addition of one "staff assistant-surgeon" for each staff surgeon would render the system complete. But at present I urge only the appointment of staff surgeons.

21. By this means the function of superintendent would be properly performed, which it has never yet been; all duties would be carried on in each circle without arrears or irregularities; great economy, as well as greatly increased efficiency, would be the certain result in time of peace; and in time of war, the Government would have ten or twelve of their best men ready to their hand for employment in the field, without stripping regiments or establishments, and without most seriously deranging the whole working of the department throughout the presidency, as is now the case in any sudden call.

22. Moreover, a great boon and most desirable encouragement would be given to the large body of full surgeons, who have now very many years to wait, after their promotion, without any increase of allowances, which they can only obtain by reaching, step by step, the grade of superintending surgeon; while, even under the system of selection to that grade, which has now been recommended, the existence of an intermediate step would greatly quicken professional zeal and ambition, and by its cheering effect would repay the Government a hundred-fold for the inconsiderable extra expense which the measure would involve.

23. The initiation of the nomination to all the principal appointments in the medical service has, hitherto, rested with the Commander-in-Chief; the real power of appointment being in the Governor-General in council, whose confirmation was necessary to His Excellency's nomination.

I recommend that this apparently divided responsibility should be set aside; and that the appointment of the high medical officers should rest directly, as it hitherto has practically, with the Governor-General in council.

The medical service is not exclusively military in its composition, although all its members hold military commissions. On the contrary, the civil appointments, of all kinds, are much more numerous than the military.

All military appointments should be made by the Commander-in-Chief; all civil appointments by the Governor-General in council, the Governors in council, and the Lieutenant-Governors.

The Director-General should be appointed by the Governor-General in council, the inspectors-general, superintending surgeons, and staff surgeons, by the Governor-General in council.

But in every appointment, whether by the Governor-General in council, the Governor in council, and the Lieutenant-Governor, or by the Commander-in-chief, *the Director-General should recommend;* and, although it would not be expedient that the nomination of the Director-General should be declared to be binding and final (because some appointments are personal, and, in the foreign department, medical officers from other presidencies might be desired), still his recommendation should never be set aside, except upon very strong grounds, which should be placed upon record.

24. No doubt this measure would limit the patronage of all the high functionaries I have named. But it is very fitting that their patronage should be so limited in regard to medical officers of whose qualities and professional capacities it is not possible for them to form a correct judgment.

25. The principle of the measure, however, is no novelty, for the power which I propose to give to the Director-General in India has always been exercised by the Director-General in the Royal service.

26. By adopting these measures the mistakes which we all occasionally commit, however unconsciously, in the administration of patronage, will be avoided. The right men will be chosen. The profession will get fair play. The rise of an officer of merit will no longer be doubtful, and the service will recover the popularity it formerly had among men devoting themselves in youth to the medical profession.

27. The assistant-surgeons of the company's service are sufficiently well paid on their first entrance into it. But many years elapse before they are promoted to the rank of surgeon, and intermediately there is no increase of emoluments for the main body of the assistant-surgeons, or for any but those who obtain detached employment.

A great stimulus to exertion would be given, and great benefit would result, if the Honourable Court would consent to allow to the assistant-surgeons, as such, some increase of emoluments on certain just conditions.

28. At present an assistant-surgeon who is in charge of a regiment receives only half the staff salary which is drawn by a surgeon holding a similar charge.—I would propose that any assistant-surgeon in charge of a regiment who after seven years' service shall be recommended by the Director-General as in every respect deserving of reward, should receive the same staff salary as would be drawn by a surgeon in the same position.

29. The assistant-surgeons might thus be divided into first and second class assistant-surgeons.

30. It certainly seems that something is required to restore the attractions which the medical service of the Honourable Company possessed in former years, but which general testimony and obvious facts unite to show it has now lost.

I remember that when twenty years ago I asked for a medical appointment from one of the directors, I was told that it was as difficult to obtain an appointment in the medical service as in the civil service; and in point of fact it was only obtained for me on that occasion by an exchange.

The medical service of the Honourable Company is now open to everybody, yet the public journals show that there are hardly more candidates than vacancies.

31. There must be a reason for this change in the estimation in which the Indian medical service is

held. Those of the profession whom I have consulted, attribute it to the fact that there are fewer prizes for assistant-surgeons in India now than formerly, and to the increased inducements which the Royal service now holds out.

It is in order to counterbalance these drawbacks, as well as to offer an encouragement which seems just and wise in itself, that I make these proposals in favour of assistant-surgeons, which I beg to recommend to the favour of the Honourable Court.

32. There are several particulars in which the medical service, as a body, lies under great disadvantages, and which they regard, justly in my opinion, as grievances that ought to be removed. I refer to the inequality which now prevails between the position of a medical officer and that of his brother officers, in respect of pension, honours, and rank.

I respectfully submit that such inequalities are founded on no sound grounds of justice, expediency, or policy; no valid reason ever has been or can be alleged for maintaining them. Their effect is to depress the spirit of the medical officer, to depreciate a profession and class of service which ought to be held in the utmost respect, and supported equally from motives of prudence and gratitude.

All such inequalities should be at once removed, and the medical officer, in respect of real rank, dress, honours and promotion, should be placed on a footing with his brother officers who hold the Honourable Company's commission like himself.

33. As the first step towards the removal of these inequalities, one which it is in the Company's own power to take, I respectfully advise the Honourable Court to lend an ear to the memorials which have been addressed to them respecting the retiring pension, and to permit their medical officers to retire upon pensions under the same regulations as all other military officers.

34. Whensoever the opportunity may be open to it, I beg to urge upon the Honourable Court the justice of representing strongly and perseveringly to Her Majesty's Ministers the claims of their medical officers to share reasonably, and in a far larger proportion than they do at present, in the military honours and decorations which are granted for services in the field.

The absurdity of regarding a medical officer as a non-combatant is, I believe, abandoned.

The medical officer comes constantly under fire like other men. Every campaign which is fought exhibits the names of medical officers in the lists of killed and wounded; and the returns invariably show that they still more often fall victims to their own exertions on behalf of their suffering comrades.

Proof can hardly be required of such well-known facts. If it be, the fatal record of the service which our countrymen have been performing during the last year and a half in Turkey and the south of Russia, will more than bear out the statement I have made.

35. But the most galling, the most unmeaning and purposeless regulation by which a sense of inferiority is imposed upon medical officers, is by the refusal to them of substantive rank.

The surgeon and assistant-surgeon rank invariably with the captain and lieutenant, but the rank is only nominal wherever medical officers and others are brought together on public duty: the former has no rank at all, and the oldest surgeon on the list must, in such case, range himself below the youngest ensign last posted to a corps.

36. It is impossible to conceive how such a system as this can have been maintained so long, on the strength of no better argument than that "it has been," therefore "it ought to be."

It is impossible to imagine what serious justification can be offered for a system which in respect of external position postpones service to inexperience, cunning to ignorance, age to youth; a system which gives a subaltern who is hardly free from his drill precedence over his elder who, perhaps, has served through every campaign for thirty years; a system which treats a member of a learned profession, a man of ability, skill, and experience, as inferior in position to a cornet of cavalry just entering on the study of the pay and audit regulations; a system, in fine, which thrusts down grey-headed veterans below beardless boys.

37. It is not necessary to refer to parliamentary evidence or to memorials for testimony to the reality of this grievance. Its occurrence is notorious. It has happened frequently; it has happened within my own knowledge, and not three months ago.

38. I trust that the Honourable Court will put forth all their energies to obtain from Her Majesty's Government (from which, I presume, it must proceed) an abrogation of this regulation so humiliating to medical officers, and therefore injurious to the service.

39. I have only now to add a few words regarding the numerical strength of the medical establishment.

The Honourable Court have been pleased, not long since, to sanction an augmentation of the medical establishment. But demands are perpetually increasing. The new furlough rules have the power of augmenting largely the number of temporary absentees. The requisitions for medical officers are so constant and so urgent, that it is still found impossible to detain young officers at the presidency for that training which is wisely enjoined by the regulations, and which all authorities concur in regarding as essential to the usefulness of the young assistant-surgeon.

I beg, therefore, to recommend that the medical establishment should be revised annually; that it should be kept up to its full strength, and that either a reserve should be added to it, or that supernumeraries should always be maintained to the extent of at least ten per cent. on the regular strength of the establishment.

40. Lastly, I have to observe, with respect to the financial part of the question, that I do not pretend that the improvements now suggested and recommended can be effected without additional expense. Undoubtedly additional charge will be involved in these proposals. But I do not from that reason shrink from recommending them. I believe that the ordinary revenue of the country will be found amply sufficient to bear any such small additional charge, and I sincerely trust that the Honourable Court will not be deterred by such a consideration from introducing into the system of its medical service the great amendment of which it is susceptible, and which it so much needs.

41. I will now close this minute by recapitulating the several suggestions and recommendations which have been made therein regarding the medical service of the East India Company.

I. That the several medical boards should be abolished.

II. That the control and management of the medical department in each presidency should be placed in the hand of a single officer, who shall be called the Director-General. That this officer should be selected from among the superintending surgeons or staff surgeons, and that his tenure of office should be for five years.

III. That the Director-General should be assisted by two officers, to be called the inspector-general of military hospitals, and the inspector-general of civil hospitals and dispensaries, and that they should be selected in the same manner as the Director-General.

IV. That the superintending surgeon should henceforth be appointed invariably by selection, not by seniority.

V. That a grade of staff surgeons should be created, one in each circle, and one at the presidency, who should be appointed by selection from the surgeons.

VI. That assistant-surgeons after seven years' service, and on the recommendation of the Director-General, should, if they are in charge of a regiment, receive the same staff salary as a surgeon holding a similar charge.

VII. That the injurious inequalities which are now maintained between medical and other officers should be removed.

VIII. Especially that medical officers should be permitted to have the same option regarding retiring pension as all other officers of the army.

IX. That medical officers should receive a fair proportionate share of military honours and decorations.

X. Above all, that the relative rank allotted to medical officers should no longer be nominal, but substantive and real; and that medical officers should thus be relieved from the humiliation to which they are now habitually subjected.

XI. That the medical department should not only be kept up to its full strength at all times, but that a reserve or supernumeraries should be maintained, in order that young medical officers may be certain to enjoy those opportunities of gaining experience on their first arrival which the Government is enjoined to provide for them, and which is essential to their efficiency, but which they do not now obtain.

42. I have now the honour to commend this important subject to the careful and the early consideration of the Honourable Court.

(Signed) DALHOUSIE.

February 1856.

MILITARY DESPATCH to the GOVERNMENT of INDIA, dated 10th June 1857. No. 92.

1. We have taken into careful consideration the representation by the Governor-General in council, as contained in your military letter, dated the 28th February 1856, No. 83, and its accompanying minutes, especially that by the Marquis of Dalhousie relating to the medical establishment of the armies of the three presidencies.

2. You were informed in our military letter of the 7th March 1848 of the views entertained by us of the necessity for selecting for the stations of superintending surgeons and members of the board, those medical officers who should be most distinguished for professional science and the zealous discharge of their duties, due regard being had to seniority in the service when the qualifications of the individuals appeared to be adequate to the correct performance of the duties of the office. We, at the same time, authorized you to enlarge the sphere of selection for the medical board, previously limited to superintending surgeons, so as to permit of the appointment of a surgeon of distinguished talents and acquirements in his profession to the office of third or junior member of the board. The appointment of such an officer in the vigour of his age, we observed, would be calculated to infuse new energy into the board, and to render it more efficient for the performance of its various duties.

3. The Governor-General, we regret to observe, met with great opposition when he proceeded to act on this authority, even to the very limited extent of taking the third of the three senior superintending surgeons for a vacancy in the medical board. Your Government must be relieved hereafter from any difficulty on this head.

4. Having resolved to adopt the system of individual responsibility in the military and public works departments, in substitution of management by a board, we have now determined, in conformity with the recommendation of the Governor General in council, to adopt the same principle for the medical establishments.

5. The several medical boards at the three presidencies are accordingly to be abolished; and the functions heretofore confided to those boards are to be placed in the hands of an officer at each presidency, to be selected for that purpose by the Governor-General in Council, or by the Governors in council. This officer is to be designated Director-General of the medical department, and to be appointed for a term of five years' service, renewable by the Government, if they should think that the interests of the public service will be thereby advanced.

6. The Director-General is to be allowed the services of a secretary and of an adequate office establishment.

7. We shall now notice in succession the several other measures recommended by the Marquis of Dalhousie in the minute of the 1st February 1856.

"That the Director-General should be assisted by two officers, to be called the Inspector-General of Military Hospitals and the Inspector-General of Civil Hospitals and Dispensaries, and that they should be selected in the same manner as the Director-General."

8. We concur to some extent in the views expressed by Mr. J. P. Grant, and not dissented from by the Marquis of Dalhousie, on this part of the proposed new organization. We have accordingly resolved that the Director-General shall be assisted by one officer in each of the two divisions of the Bengal Territories, viz.,

The Lower Provinces, including Pegu;—

The North-Western Provinces, including the Punjab;—

who shall be the inspector of all the hospitals, military and civil, and dispensaries in his division. This officer shall make periodical tours through his division, and shall report the results of his inspection to the Director-General, but he is not to be the channel of correspondence between the Director-General and the superintending-surgeons, who are, as at present, to correspond direct with the head of the medical department. We shall not object to the newly-acquired provinces of Oude being added to the lower provinces of Bengal, if you shall consider it a more convenient division of the respective spheres of duty. The appointment, like that of the Director-General, will be for a term of five years' service, renewable by the Government if the interests of the public service will be thereby advanced.

"That the superintending surgeons should hereafter be appointed invariably by selection and not by seniority."

9. The following is a copy of the existing regulation on this head.

"2. The Governor-General in council deems it proper to declare, with reference to the principle established by the existing regulations of Government on the subject, and to the great importance of the duties to be performed by superintending surgeons, that the succession to such appointments will not depend on seniority alone, but that the selection

will be made with reference to established character for distinguished zeal, strict assiduity, and professional ability, due regard however being had to seniority when not opposed by considerations of a still more powerful nature."

10. It is our wish and desire that this regulation shall be strictly enforced in every case, with a paramount regard to the interests of the public service.

"That a grade of staff surgeons should be created, one in each circle, and one at the presidency, who shall be appointed by selection from the surgeons."

11. This proposal is founded upon the supposition that superintending surgeons are unable to discharge their duties in consequence of the extent of their circles of superintendence. It is proposed that they shall each have a deputy, under the denomination of staff surgeon, who shall perform the duty of superintending surgeon, if that officer leaves head-quarters, and do his duties in the mofussil if he shall depute him for that purpose.

12. These duties are described in the regulations, from which the following is an extract:—

> "9. It will be the especial duty of superintending surgeons of divisions, by a frequent personal inspection of all regimental or other hospitals within the limits of the circles, to ensure the most unqualified attention to their professional duties, on the part of the surgeons and assistant-surgeons, subordinate medical officers, and native doctors; to inspect, with particular attention, the journals of medical practice; to correct the errors of inexperience, by instruction to those who require it; and, in general, minutely and scrupulously to enforce the most strict and undeviating execution and observance, by all concerned, of the established rules and regulations of the department."

13. We greatly fear that, if these duties of inspection were delegated to the proposed class of staff surgeons, the advantages of an efficient supervision would be, to a great extent, lost or neutralized. We should, however, not object to the Director-General, after having had sufficient experience, say for 12 months, of the working of the new system, reporting whether he considers the appointment of a limited number of staff surgeons indispensable to the efficiency of the medical service; and, if so, what number he considers to be the least that the exigency requires.

14. Considering the increased facilities of locomotion which the railways now under construction, and in contemplation, will furnish from year to year, we are of opinion that it will not be necessary to add to the present number of superintending surgeons; but we should approve of giving such extra aid as may be absolutely necessary at the head-quarters of each circle to facilitate the preparations of returns and reports, which at present form a large part of the duty of the superintending surgeons.

"That assistant-surgeons, after seven years' service, and on the recommendation of the Director-General, should, if they are in charge of a regiment, receive the same staff salary as a surgeon holding a similar charge."

15. Assistant-surgeons in medical charge of regiments and corps now receive the staff salary of Rs. 165 a month. We consider that it will be sufficient to allow the staff salary of surgeon, viz., 300 Rs. per month, to assistant-surgeons so employed, after 10 years' service; and we approve of the suggestion that these assistant-surgeons shall be designated "first class," and their juniors "second class," assistant-surgeons.

"That the injurious inequalities which are now maintained between medical and other officers should be removed.

"Especially that medical officers should have the same option, regarding retired pension, as all other officers of the army."

16. We have not in any of our despatches relating to the new furlough regulations prescribed a revised and complete scale of retiring pensions for our medical servants as we have for our military officers. To obviate any doubt upon the subject we now inform you that the following is the scale which we have adopted for the medical branch of our service.

				per ann.	
After	17	years'	service	£191 12*s.*	6*d.*
„	21	„	„	250 „	„
„	25	„	„	300 „	„
„	29	„	„	365 „	„
„	32	„	„	500 „	„
„	35	„	„	700 „	„

The scale of privileged furlough and leave of absence as counting for service for the retiring pension has been already communicated to you.

17. With respect to the "option" referred to by the Governor-General as professed by military officers, of taking pension according to regimental rank or length of service, it is, as you are well aware, quite inapplicable to the medical service under the present system, and will be still more so under the revised system, inasmuch as all appointments above the rank of surgeon are, and will continue to be, staff appointments filled by selection.

18. By the present regulations a medical officer holding the highest appointment, that of member of the medical board, is required absolutely to retire from the service after he has served five years in that appointment, in consequence of which it may happen that, although still fit for service, he is deprived of the opportunity of serving a sufficient time to qualify for the highest rate of pension. We are of opinion that this rule of compulsory retirement from the service should be cancelled; and that a medical officer, who is still fit for the service, may, even if he has passed a tour of duty in the highest appointment, be permitted to return to the performance of other medical duties until he shall have completed 35 years' service; and so be enabled to qualify for the retiring advantages held out to officers of his branch of the service.

"That medical officers should receive a fair proportionate share of military honours and decorations."

19. We shall continue to use our best endeavours to promote the attainment of this object.

"Above all, that the relative rank allotted to medical officers, should no longer be nominal but substantial and real."

20. The relative rank of medical with military officers, under the new arrangement, will be as follows:—

Director-General with brigadier-general.

Inspector-general with colonels.

Superintending surgeon with Lieutenant-colonels.

Senior surgeons with majors.

Surgeons with captains.

Assistant-surgeons with Lieutenants.

21. With a view of giving effect to this scale of precedence when military and medical officers are associated in committees convened by the Commander-in-Chief, we desire that the regulation quoted in the margin* be cancelled; and the following regulation substituted for it, viz., whenever committees composed of military and medical officers are convened by the Commander-in-Chief, the President is invariably to be a military officer; and the members are to take precedence according to their relative rank.

* "Whenever committees composed of military and medical officers are convened by the Commander-in-Chief, the President is invariably to be a military officer, and the members are to take precedence, military officers first, and then medical officers."

22. The further regulation quoted in the margin † is, we conclude, in operation at the three presidencies.

† "6. When committees are convened by Government, composed of military and medical officers, or of these and civilians also, the relative precedence of the members is to be that in which they are named in the order convening the committee. In such cases the President may belong to any branch of the service."

That the medical department should not only be kept up to its full strength at all times, but that a reserve, or supernumeraries, should be maintained, in order that young medical officers may be certain to enjoy those opportunities of gaining experience on their first arrival, which the Government is enjoined to provide for them, and which is essential to their efficiency, but which they do not now obtain.

23. Your medical establishment is now, we believe, complete. We will take measures for adding and keeping up 20 supernumerary assistant-surgeons for the object here mentioned during the next two or three years; but you will bear in mind that a highly-qualified class of native medical officers, taught in the medical colleges in India, is rapidly coming forward, who will be available for various medical appointments.

24. We concur with the recommendation of your Government that the Director-General, the Inspector-General, and the superintending surgeons shall be appointed by the Governor-General in council, or the Governors in council.

25. In all medical appointments, whether by the Governor-General in council, the Governors in council, the Lieutenant-Governors, or the Commanders-in-Chief, the opinion and advice of the Director-General will doubtless be sought before the appointment is proposed; but the responsibility for the several appointments must rest with the high authorities by whom they are respectively made.

26. It only remains that we should express our views on the scale of salary for the three grades of medical superintendents.

27. Salaries at the following rates we consider to be adequate, viz.,

Director-General, Bengal.

Consolidated pay and allowances - - Rs. per mo., 3,000

Inspector-General of Hospitals.

Consolidated pay and allowances - - „ „ 2,000

Superintending Surgeons.

Consolidated pay and allowances - - „ „ 1,800

with such compensation for travelling expenses as may be considered to be necessary.

28. We leave it to your Government to adopt such measures with regard to the present members of the medical boards who may not be selected for employment, as, without delaying the adoption of the new system, and without reducing the allowances of incumbents, shall allow them to serve the remainder of their tour of five years' service in the way most advantageous to the public interests. They may probably be usefully employed in bringing up the medical reports to the date of the commencement of the new system, so that the Director-General shall commence without arrears.

29. Finally, you will prepare an arrangement for adapting the new system to the Presidencies of Madras and Bombay. At Madras the appointment of a Director-General may be authorized at a salary of Rs. 2,700 a month; at Bombay at a salary of Rs. 2,500 a month; and at each of those Presidencies an Inspector-General of hospitals, at a salary of Rs. 1,900 a month. The number and allowances of the superintending surgeons at Madras and Bombay will be continued on the present scale.

We are, &c.,

(Signed) D. D. Mangles.
F. Currie.
C. Mills.
R. Ellice.
J. W. Hogg.
M. T. Smith.
E. Macnaghten.
J. P. Willoughby.
J. H. Astell.
R. J. H. Vivian.
W. J. Eastwick.

London,
10 June 1857.

APPENDIX XVIII.

(*Prepared by the Secretary.*)

MEMORANDUM relative to the CONSTITUTION of the ARMY MEDICAL BOARD.

THE earliest notice of a distinct administrative organization is in 1756, when Lord Barrington, Secretary-at-War, was directed "to establish an "Hospital Board for the medical service of the army "intended to take the field, that under their constant "direction this part of military service (relating alike "to medicines, hospital stores, and every other requi- "site provision for the sick) might be carried into "execution with ability, regularity, and despatch." The Board was composed of the physicians belonging to the hospitals of Her Majesty's Forces, the surgeon-general, and the principal surgeon and purveyor to the hospitals.

Subsequently the constitution of the Board was changed and consisted of two members only, the physician-general and the surgeon-general, who was also inspector of regimental infirmaries.

In 1793 the two last-named appointments were separated, and the inspector of regimental infirmaries was added as a third member to the Board, in which collectively was vested the general superintendence of the department, and the sole right of recommending individuals for commissions and officers for promotion, the instruction to the members being "always to "consult together regarding appointments."

But in 1798 they ceased to act as a Board; distinct duties and patronage were assigned to the members, each being made responsible solely for his own acts. The physician-general recommended the physicians for appointments; the surgeon-general recommended the deputy inspectors, regimental and staff surgeons, and assistant surgeons; and the inspector-general had the nomination of apothecaries and hospital mates.

In 1810, on the recommendation of a Parliamentary Committee, the Board was dissolved, and a director-general of army hospitals appointed, with two principal inspectors of hospitals to assist him but having no control in the management of the department. In 1816 the two principal inspectors were discontinued, but in 1818 one of them was restored as professional assistant to the director-general. Since 1833 this appointment has always been held by a staff surgeon or a deputy inspector.

In 1851 the appointment of director-general was abolished, and that of superintendent of the Army Medical Department substituted, but it was restored in 1853, when the Ordnance Medical Department was amalgamated with that of the army.

APPENDIX XIX.

(*Given in by Dr. A. Smith.*)

On the ESTABLISHMENT required for the OFFICE of the ARMY MEDICAL DEPARTMENT.

Memorandum.

For the duties to be discharged in the office of the Army Medical Department at head quarters, the following officers are in my opinion required,—

1 Director-General,
2 Inspectors-General,
1 Staff surgeon, 1st class,
2 Staff surgeons, 2nd class,
1 Assistant staff surgeon,
1 Apothecary, and
1 Dispenser of medicines.

1st. The Director General, to superintend and direct generally the department on home and foreign stations, to provide medical officers for the service, and apportion them to the stations where they are required; to personally communicate with the Minister for War, the Commander-in-Chief, the military secretary, the adjutant-general, and the quartermaster-general, and to furnish them with verbal or written opinions when required in reference to matters relating to the public service; to communicate also with the secretary for the colonies in reference to matters connected with the colonies, &c., &c.

2nd. An inspector-general (the senior), to act as professional assistant to the Director-General; to conduct all professional correspondence; to sit as president of all boards on sick or wounded officers of the various departments of the military service, and also on boards ordered to report on persons belonging to the civil service connected with the army, the treasury, the colonies, &c., &c.

3rd. The second inspector-general, to make periodical inspections of the general and regimental hospitals of the kingdom, and report to the Director-General in detail how the professional duties are discharged in each, and if all the sanitary precautions are taken which are calculated to give every chance of recovery to the sick and secure a continuance of health to the well; also to officiate as president of a board for statistical purposes, direct its proceedings while he is in London, and furnish instructions for its guidance during the time he is absent on inspections.

4th. One staff surgeon of the 1st class, to manage, in conjunction with the purveyor-in-chief, the affairs of the purveying department.

5th. One staff surgeon of the 2nd class, to inspect all the medicines and instruments furnished for the use of the army and colonial department before they are despatched from the suppliers, and reject all such as are not considered first rate; to examine the numerous medical bills sent to the office for remuneration for services rendered to the army by private practitioners, both in the United Kingdom and the colonies.

6th. The second staff surgeon of the 2nd class, to act as a member of the statistical board, and direct its proceedings during the absence of the president on tours of inspection.

7th. One staff assistant-surgeon, to form the junior member of the statistical board, and work in concert with the president and the other member, while the former is in London, and with the other member when the president is absent.

8th. An apothecary to the forces, to examine all requisitions for medicines, instruments, &c., and also the numerous returns connected with the apothecary's department; to check the accounts of the suppliers of medicines and instruments; to check the accounts in triplicate required by the War Office and the Colonial Department, some of which form moderately thick folio volumes. The amount of duty required of this officer is very great.

9th. A dispenser of medicines, to act partly as clerk to the apothecary, and partly to assist him in checking the requisitions and accounts, it being frequently necessary for two to be employed on the same return.

APPENDIX XX.

(Given in by Mr. Milton.)

WARRANT regulating the PURVEYOR'S DEPARTMENT.

VICTORIA R.

WHEREAS We have considered it necessary for the improvement of Our Service, and for the better providing for the duties of the Purveyor's Department, that the ranks and classes of that department should be extended, and the rates of pay and half-pay of the officers and clerks thereof be regulated and amended: Our Will and Pleasure thereof is, that instead of the provisions contained in Our Royal Warrant of the 27th April 1853, re-establishing the Purveyor's Department, those contained in this Our Royal Warrant, to be administered and interpreted by Our Secretary-at-War, shall from the date hereof be the sole authority regarding that department of Our Service.

1. The purveying department of the army shall consist of a purveyor-in-chief, a deputy purveyor-in-chief, purveyors, purveyor's clerks of the 1st class, and purveyor's clerks of the 2d class.

2. The full pay of these officers and clerks shall be according to the accompanying table:—

Pay.	Purveyor-in-Chief. per diem.	Deputy Purveyor-in-Chief. per diem.	Purveyors. per diem.	Clerks 1st Class. per diem.	Clerks 2nd Class. per diem.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
On appointment	1 5 0	0 15 0	0 10 0	0 8 0	0 7 0
After 5 years' Service -	1 7 6	0 17 0	0 12 0	0 9 6	0 7 0
„ 10 „ -	1 10 0	0 19 0	0 13 6	0 11 6	0 8 0
„ 15 „ -	1 10 0	1 1 0	0 15 0	0 12 6	0 9 0
„ 20 „ -	1 10 0	1 1 0	0 16 6	0 14 0	0 10 0
„ 25 „ -	1 10 0	1 1 0	0 18 0	0 14 0	0 10 0
„ 30 „ -	1 10 0	1 1 0	1 0 0	0 14 0	0 10 0
Allowances.					
Ordinary Field Allowance -	0 3 0	0 2 6	0 2 0	0 1 0	0 1 0
Extra Ordinary ditto -	0 5 0	0 4 0	0 3 6	0 1 6	0 1 6
	No.	*No.*	*No.*	*No.*	*No.*
Servants, or allowance in lieu -	2	2	1	1	1
Forage for Horses, if necessarily kept - -	2	2	1	1	1

3. The purveyor-in-chief, deputy purveyor-in-chief, and the purveyors, shall be commissioned officers, and shall have the following relative ranks:—

The purveyor-in-chief, as major, according to the date of his commission as such.

The deputy purveyor-in-chief, as captain, according to the date of his commission as such.

The purveyors, as lieutenants, according to the dates of their commissions, during the first ten years of their service in the department; but after that time as captains, but as junior of that rank.

4. These officers, if placed on half-pay by reduction of establishment, or in consequence of ill-health contracted in the service, or after 25 years' full pay service, in which last case they shall have the right to retire upon half-pay, will be allowed the half-pay to which their total service in the department, as specified in clause 10 of this warrant, shall entitle them, according to the following table:—

	Purveyor-in-Chief. per diem.	Deputy Purveyor-in-Chief. per diem.	Purveyors. per diem.
	£ s. d.	£ s. d.	£ s. d.
After 10 years' Service -	0 14 0	0 10 0	0 5 0
„ 15 „ - - -	0 14 0	0 10 0	0 7 0
„ 20 „ - -	0 17 0	0 13 0	0 8 0
„ 25 „ - - -	0 17 0	0 13 0	0 9 0
„ 30 „ - -	1 0 0	0 16 0	0 10 0

5. Any officer, retiring at his own desire after 25 years' full-pay service, will be entitled to the rate assigned to his rank and service in the above table, provided he shall have served three years in the rank from which he retires; but if he shall not have served three years in such rank he shall only receive the rate attached to the rank from which he was last promoted.

6. The widows and families of these officers will be allowed the pensions and compassionate allowances granted to officers of their relative ranks by the Pension Warrant of 15th June 1855, subject to all the conditions and restrictions stated in the said warrant.

7. These officers must, if so required by the Secretary-at-War, give such security for the due care of public monies entrusted to them as the Secretary-at-War may be pleased to direct.

8. The purveyor's clerks will not receive commissions, but will hold temporary appointments. They will not be entitled to any half-pay on reduction, or retirement, nor will their widows or families be entitled to any pensions or compassionate allowances.

9. The purveyor's clerks will have the following relative ranks:—

Purveyor's clerk of the 1st class, as ensign, according to the date of his appointment.

Purveyor's clerk of the 2nd class, as ensign, but as junior of that rank.

10. Service in the inferior ranks will be allowed to reckon, if continuous, towards increase of full-pay, in the higher ranks; but a clerk or officer will be required on promotion to serve one year on each rate of pay of the rank to which he shall be promoted, commencing at the minimum of each rank, until he shall have attained the rate of pay warranted by the whole of his service.

The purveyor-in-chief will be allowed to reckon only one third, and the deputy purveyor-in-chief only one half, of their service as purveyor, or purveyor's clerk, towards increase of full pay in their respective ranks of purveyor-in-chief, and deputy purveyor-in-chief.

Given at Our Court at Saint James', this thirty-first day of October 1855, in the nineteenth year of our reign.

By Her Majesty's Command,

PANMURE.

APPENDIX XXI.

(*Extract from the Regulations for Army Hospitals.*)

Military Hospitals.—Articles composing the different Diets for a Day.

Full.	Half.	Low.	Spoon.	Milk.	Note.
12 oz. Meat	8 oz. Meat	4 oz. Meat	8 oz. Bread	14 oz. Bread	The meat to be boiled with the addition of the barley, ¼ oz. sugar and flour, small vegetables, and pepper, so as to make good broth for the dinner of patients, of whose diet animal food forms a part; the broth is to be issued to individual patients in the quantity to each specified in the Diet Table. When potatoes cannot be procured of a sufficiently good quality, and at a reasonable price, bread or rice may be substituted in their place in the following proportions: Full diet. 8 oz. bread, or 4 oz. rice, in lieu of 16 oz. potatoes. Half diet, 4 oz. bread, or 3 oz. rice, in lieu of 8 oz. potatoes. Low diet, 4 oz. bread, or 2 oz. rice, in lieu of 8 oz. potatoes.
16 „ Bread	16 „ Bread	12 „ Bread	¼ „ Tea	2 „ Rice	
16 „ Potatoes	8 „ Potatoes	8 „ Potatoes	1½ „ Sugar	3 pints Milk	
2½ „ Barley	1¼ „ Barley	1½ „ Barley	6 „ Milk		
¾ „ Salt	¾ „ Salt	½ „ Salt			
¼ „ Tea	¼ „ Tea	¼ „ Tea			
1¾ „ Sugar	1¾ „ Sugar	1¾ „ Sugar			
6 „ Milk	6 „ Milk	6 „ Milk			
4 „ Vegetables	3 „ Vegetables	2 „ Vegetables			
¼ „ Flour	¼ „ Flour	¼ „ Flour			

Diet Table.

Meal.	Full.	Half.	Low.	Spoon.	Milk.	
Breakfast -	1 pint Tea 6 oz. Bread	1 pint Tea 6 oz. Bread	1 pint Tea 4 oz. Bread	1 pint Tea 4 oz. Bread	1 pint Milk 6 oz. Bread	Extras, including wine, porter or spirits, may be given, when required, with any of the diets constituting the scale. * Puddings to consist of the following ingredients;—3 oz. of rice, or 2 oz. of sago, or 8 oz. of bread; 1 oz. of sugar, ½ pint of milk; 1 egg; ginger or cinnamon, a few grains. The medical officer in charge of sick may, at his discretion, order coffee in lieu of tea, in such cases as he may deem necessary. ½ oz. of coffee may be substituted for ⅛ oz. of tea at each meal, breakfast or supper.
Dinner - -	12 oz. Meat 4 „ Bread 16 „ Potatoes 1 pint Broth	8 oz. Meat 4 „ Bread 8 „ Potatoes ¾ pint Broth	4 oz. Meat 4 „ Bread 8 „ Potatoes ½ pint Broth	Any article at the discretion of the Medical Officer, as Puddings, &c.*	1 pint Milk 2 oz. Rice 4 „ Bread	
Supper - -	1 pint Tea 6 oz. Bread	1 pint Tea 6 oz. Bread	1 pint Tea 4 oz. Bread	1 pint Tea 4 oz. Bread	1 pint Milk 4 oz. Bread	

APPENDIX XXII.

(*Extract from the Instructions for Naval Hospitals.*)

A Scheme of Diet for Patients in the Royal Naval Hospitals and Marine Infirmaries.

Full.	Half.	Low.	Fever.	
Bread - - 1 lb. Beef or Mutton - 1 lb. Potatoes or Greens 1 lb. Herbs for Broth - 25 drms. Barley - - 14 drms. Salt - - - 8 drms. Vinegar - - 16 drms. Tea - - - 4 drms. Sugar - - 16 drms. Milk for Tea - ⅓ pint Broth - - 1 pint Home. { Beer (Small) - 2 pints; or Strong - 1½ pint; Beer for Servants, viz:— Nurses - - 1½ pint; * Overseers of Washers, Washers, and Attendants on Lunatics } 2 pints Foreign { Wine or Porter } at the Surgeon's discretion, not exceeding { 1 pint; 1½ pint Veal, Fowls, Fish { Such quantities in lieu of Beef and Mutton as the Medical Officer may prescribe. Rice or Flour Pudding—at the discretion of the Medical Officers to Patients on Low or Fever Diet only.	Bread - 1 lb. Beef or Mutton - - } 8 ozs. Potatoes or Greens - } 8 ozs. Herbs for Broth - } 25 drms. Barley - - 14 drms. Salt - - 8 drms. Vinegar - 16 drms. Tea - - 4 drms. Sugar - 16 drms. Milk for Tea ⅓ pint Broth - 1 pint Home { Beer (Small) 1½ pint; or Strong 1 pint Foreign { Wine at the surgeon's discretion, not exceeding } 1 pt.	Bread - 8 ozs. Herbs for Broth } 12½ drms. Barley - 7 drms. Salt - - 8 drms. Tea - 4 drms. Sugar - 16 drms. Milk for Tea - } ⅓ pint Milk for Diet - } 1 pint Broth - ½ pint	Bread, 8 ozs. or Sago 4 ozs. Tea - 4 drms. Sugar - 20 drms. Milk for Tea - } ⅓ pint Milk for Diet - } ¼ pint	NOTE. Two drams of Souchong tea, eight drams of Muscovado sugar, and one-sixth part of a pint of genuine milk, to be allowed to each patient for a pint of tea, morning and evening. The meat for the full and half diet is to be boiled together, with fourteen drachms of Scotch barley, eight drachms of onions, one drachm of parsley, and 16 drachms of cabbage for every *pint of broth*, or at the discretion of the Medical Officers, eight drachms of carrots, and eight drachms of turnips, in lieu of the cabbage, which will make a sufficient quantity of good broth, to allow a pint to each on full and half diet, and half a pint to each on low diet:— Rice pudding.—Each to contain,— Rice - - 3 oz. Sugar - - 1 oz. Milk - - ¾ pint Eggs - - 1 No. Cinnamon - 1 blade Flour pudding.—Each to contain,— Flour - - 4 oz. Sugar - - 1 oz. Milk - - ¾ pint Eggs - - 1 No. Ginger - a few grains.

* Labourers, sempstresses, and scrubbers, &c., to have 2*d.* a day in lieu of beer, and the matron, porter, and butler, 10*d.* a day in lieu of rations.

N.B.—As this Scale provides liberally for each class of patients, medical officers are carefully to avoid all deviations from it as far as their duty towards the sick may permit.—Such patients (not exceeding six) as may be inclined, are to be admitted to attend the weighing, measuring, &c. of the provisions in the morning, and serving them out when cooked.

APPENDIX XXIII.

(Extract from the Bengal Medical Regulations.)

Bengal.

Table of Diets for Hospitals of European Troops.

Full Diet.	Half Diet.	Low Diet.	Milk Diet.	Spoon or Fever Diet.
BREAKFAST.				
Tea, ½ oz. Bread, 1 lb. Butter, 1 oz. Sugar, ½ oz.	Tea, ½ oz. Bread, 1 lb. Butter, ½ oz. Sugar, ½ oz.	Tea, ½ oz. Bread, 8 oz. Sugar, ½ oz.	Tea, ½ oz. Bread, 1 lb. Butter, ½ oz. Sugar, ½ oz.	Tea, ¼ oz. Sugar, ¼ oz.
DINNER.				
A pint of broth, with barley, greens, and onions, and 1 lb. of meat, either mutton or beef.	A pint of broth, with rice, barley, greens, or onions, and 8 ozs. of mutton, of good and edible quality, or a pint of chicken soup, with vegetables as above; a chicken or half a fowl, weighing, when ready for being dressed, not less than 8 ozs.	A pint of mutton or chicken broth.	A pint of milk (new) or a pint of rice and milk, with ½ oz. of sugar.	Bread, ½ lb., to be made into panado or pudding, or 4 oz. of sago.
SUPPER.				
A pint of rice gruel, with ½ oz. of sugar, seasoned with ginger or nutmeg, and a glassful of wine, should any be allowed him.	The same as full.	The same as full.	The same as dinner.	The same as breakfast.

In specifying the quantity of each item of meat for the several kinds of diet, it is to be distinctly understood that meat in a raw state is intended, and not meat which has been already boiled.

Articles composing the different Kinds of Diet for a Day.

Avoirdupois Weight.

Full.	Half.	Low.	Milk.	Spoon.
Meat, 1 lb., either beef or mutton. Bread, 1 lb. Butter, 1 oz. Milk, 1 measure. Sugar, 1 oz. Tea, ½ oz. Rice, 4 oz., for gruel and congee water. Salt, ½ oz. Onions, 1 oz. Pepper, 1 drachm. Ginger, ½ ditto. Nutmeg, ½ ditto. Barley, ½ oz. Flour, ½ oz. Firewood, 2 seers.	Mutton, 8 oz. of good and edible quality, or half a fowl or a chicken. Bread, 1 lb. Butter, ½ oz. Milk, 1 measure. Sugar, 1 oz. Tea, ½ oz. Rice, 4 oz., for gruel or congee water. Salt, ½ oz. Onions, 1 oz. Pepper, 1 drachm. Ginger, ½ ditto. Nutmeg, ½ ditto. Barley, ½ oz. Flour, ½ oz. Firewood, 2 seers.	Mutton, 8 oz. for preparing broth, or a chicken for broth. Bread, 8 oz. Milk, 1 measure. Sugar, 1 oz. Tea, ½ oz. Rice, 4 oz., for gruel or congee water. Salt, ½ oz. Onions, 1 oz. Pepper, 1 drachm. Ginger, ½ ditto. Nutmeg, ½ ditto. Barley, ½ oz. Flour, ½ oz. Firewood, 2 seers.	Bread, 1 lb. Milk, 2 pints and 1 measure for tea. Butter, ½ oz. Sugar, 1½ oz. Tea, ½ oz. Rice, 6 oz. for rice or congee water. Salt, ½ oz. Firewood, 2 seers.	Bread, 8 oz., or 4 oz. sago. Sugar, 1½ oz., for tea, sago, or panado. Tea, ½ oz. Milk, 2 measures, for tea and panado. Salt, ½ oz. Nutmeg, ½ drachm. Rice, 2 oz. for congee water. Firewood, 2 seers.

N.B.—The half of a fowl or chicken in the above "half diet" is to weigh 8 oz. exclusive of bone.

The undermentioned vegetables shall be considered as part of the authorized hospital dietary, for full and half diet; the kind and quantities of those articles to be employed for that purpose being left to the discretion of medical officers, and included as extras in the separate statements furnished by them, and which are to be subject to check and counter-signature, as heretofore, by superintending surgeons. It is to be understood that the quantity noted opposite each article is intended only as the maximum to be allowed to one man on one day.

	Half. lb.	Full. lb.		Half. lb.	Full. lb.
Potatoes	½	¾	Yams	½	¾
Pumpkins	½	1	Ram-tooraees	½	¾
Cauliflower	½	1	Turnips	½	1
Cabbage	½	1	Carrots	½	1
Sweet Potatoes	½	¾			

The issue of such fruits as may be procurable is also sanctioned, when considered actually necessary, to the sick in hospital of European corps, by the commissariat, on a separate requisition from the medical officer, countersigned by the superintending surgeon.

APPENDIX XXIV.

RATION of the EUROPEAN SOLDIER in INDIA.

Extract from General Orders by the Most Noble the Governor General of India, in Council, dated Fort William, October 28th, 1853.

1. * * * The daily ration of the European soldier shall in future consist of 1 lb. of bread, 1 lb. of meat, 4 oz. of rice, $2\frac{1}{2}$ oz. of sugar, $\frac{5}{7}$ oz. of tea, 1 oz. of salt, 8 oz. of vegetables, and 3 lbs. of firewood.

2. The meat will be cut up into joints, and such portions of the animal (such as the ribs and upper joints of the forelegs) as are more than two-thirds bone will be excluded from the ration.

3. The rations of vegetables will consist of such descriptions as may be procurable at the several stations of the army during the different seasons of the year.

4. * * * The bread issued in the rations of a soldier is to be of the best quality, and equal to that provided for hospital diet. Mutton will be issued twice a week in lieu of beef, and in the same quantity, whenever circumstances may admit. Coffee may be substituted for tea in the proportion of 2 lbs. of the former to 1 lb. of the latter, whenever tea is not procurable, or coffee may be preferred and is at hand.

5. The ordinary tea rations will consist of one-third of green and two-thirds of black tea, whenever circumstances may admit of the issue of both kinds,"

This order is to be considered applicable to the three Presidencies.

APPENDIX XXV.

(*Papers given in by Commissary General Adams, C.B.*)

No. 1.—FRENCH RATION in the CRIMEA.

			lbs.	oz.	dr.
750	grammes	Bread	1	10	7
		and			
100	„	Biscuit	0	3	$8\frac{3}{8}$
		or			
650	„	Biscuit	1	6	$14\frac{3}{8}$
300	„	Fresh Beef	0	10	$9\frac{1}{8}$
240	„	Salt Pork	0	8	$7\frac{1}{2}$
60	„	Rice or Haricot Beans	0	2	$1\frac{3}{4}$
16	„	Salt	0	0	9
16	„	Coffee	0	0	9
21	„	Sugar	0	0	$11\frac{3}{4}$
$\frac{1}{4}$	litre	Wine		gill	$1\frac{3}{4}$
		or			
$\frac{1}{16}$	„	Brandy		„	$\frac{7}{16}$

And they are allowed to purchase with the above an equal quantity of rice, sugar, and coffee.

No. 2.—RATION of the TURKISH SOLDIERS of the TURKISH CONTINGENT FORCE, paid, subsisted, and clothed by the British Government during the late War in the East.

				oz.
300	drachms	Bread	=	33·80
		or		
200	„	Biscuit	„	22·53
120	„	Fresh Beef	„	13·52
		or		
80	drachms	Mutton		9·01
		or		
40	„	Cavourma, Turkish preserved mutton entirely free from bone	„	4·50
27	„	Rice	„	3·04
3	„	Butter	„	0·33
$6\frac{1}{2}$	„	Salt	„	0·73
$6\frac{1}{2}$	„	Onions	„	0·73
1	„	Oil	„	0·11
1	„	Soap	„	0·11
7	„	Lentils or peas	„	0·78

For pilaf twice per week, on Sundays and Thursdays, rice and butter increased for those days as under:—

				oz.
$108\frac{1}{2}$	drachms	Rice	=	12·22
$16\frac{1}{2}$	„	Butter	„	1·85
		with an addition of		
$17\frac{1}{2}$	„	Sugar	„	1·97

The issue of fresh *beef* to the Turkish soldier was only made when mutton could not be obtained.

Salt *beef* was kept in depôt for issue in case of necessity, and the ration fixed at

60 drachms = oz. 6·76

142 drachms = 1 lb. avoirdupois.

G. ADAMS, C.G.

London, 12th June 1857.

APPENDIX XXVI.

EXTRACT from "COPY of REPORT on the ORGANIZATION of the RUSSIAN MEDICAL DEPARTMENT, and the Sanitary State of their Crimean Hospitals."—*Parliamentary Paper*, 135. *sess.* 1857, *page* 8.

DAILY RATIONS for duty men of the RUSSIAN ARMY.

1 lb. of black bread.
1 lb. of meat.
$1\frac{1}{4}$ litre of kwass (fermented drink) (=1·1 *quarts English.*)
$\frac{1}{2}$ ditto of sour cabbage (choux aigre) (=$3\frac{1}{2}$ *gills English.*)
$\frac{1}{7}$ ditto of barley.
22 grammes of salt (=$12\frac{1}{2}$ *drams avoirdupois.*)
$\frac{1}{4}$ gramme of horse raddish (=3·86 *grains.*)
$\frac{1}{4}$ litre of vinegar (=$1\frac{3}{4}$ *gills.*)
$\frac{1}{4}$ gramme of pepper (=3·86 *grains.*)

APPENDIX XXVII.

(*Furnished by Order of the Secretary of State for War.*)

STATEMENT of the RATES of STOPPAGE for RATIONS, and the several ARTICLES at present furnished, together with the Dates at which the various CHANGES have been made in the STOPPAGE, the Nature of the RATION, and the Mode of SUPPLY, since the Termination of the PENINSULAR WAR.

Troops at Home.

The ration at present issued is,—

1 lb. bread, and
$\frac{3}{4}$ lb. meat,

the stoppage being $4\frac{1}{2}$*d.*

Since the year 1813 the ration has remained the same, the stoppage at that time being fixed at 6*d.*

The warrant of August 1827 limited the stoppage to the actual cost of the ration, *not exceeding* 6*d.* per day; whilst the warrant of February 1833 authorized the issue of a ration to troops encamped in England of,—

$1\frac{1}{2}$ lb. bread, and
$\frac{3}{4}$ lb. meat,

at a similar stoppage, which however was, by warrant of February 1854, *fixed* at $4\frac{1}{2}$*d.* per ration.

Provisions for the troops in England were supplied by the Commissary-in-chief and Agent for Commissariat supplies, under the Treasury, from 1813 to 1834, by the Board of Ordnance until 1854, when this service was retransferred to the Commissariat, by which department it has been executed to the present time.

In Ireland, provisions were supplied to the troops by the Irish Commissariat acting under the Lord Lieutenant until 1822, and by the British Commissariat to 1837, from which period to 1847 the regiments provided themselves. The Commissariat resumed the supply from 1847 to 1852, from which time to May 1854 the regimental contract system was again in force, and from that period to the present time the supplies have been furnished by the Commissariat.

Troops on board Ships freighted by the Admiralty.

The ration at present issued consists of,—

1 lb. biscuit or $1\frac{1}{4}$ lb. soft bread $\frac{1}{8}$ pint spirits $1\frac{1}{4}$ oz. sugar $\frac{2}{3}$ oz. chocolate $\frac{1}{4}$ oz. tea	Daily.
$\frac{1}{6}$ pint oatmeal $\frac{1}{3}$ oz. mustard $\frac{1}{6}$ oz. pepper $\frac{1}{6}$ pint vinegar	Weekly.
$\frac{2}{3}$ lb. fresh meat $\frac{1}{3}$ lb. vegetables	Daily when procurable.
$\frac{3}{4}$ lb. salt pork $\frac{1}{3}$ pint peas, or $\frac{3}{4}$ lb. salt beef 6 oz. flour $\frac{1}{2}$ oz. suet 1 oz. currants or raisins	On alternate days when fresh provisions cannot be procured.

For which a stoppage of 6*d.* is charged; but when spirits, or additional tea and sugar in lieu thereof, are not drawn, the stoppage is only 5*d.*

We have no record of the alterations in this ration which has always been furnished by the Admiralty, but the stoppage was fixed by warrant of 1799 at 6*d.*, and appears to have continued the same until 1849, when the soldier was allowed the option of not drawing spirits, or an equivalent in tea and sugar, with a reduced stoppage of 5*d.*

Troops serving Abroad.

The ration fixed by warrant of December 1850, which is at present issued, consists of—

1 lb. bread, or $\frac{3}{4}$ lb. biscuit,
1 lb. meat, either fresh or salt,

for which a stoppage of $3\frac{1}{2}$*d.* is deducted.

The warrant of 6th February 1799 fixed the stoppage to be taken from the soldier when serving out of Great Britain, at stations where provisions were supplied by the public at 6*d.* per ration, except at Jamaica, New South Wales, and Gibraltar, where the stoppage was only $3\frac{1}{2}$*d.* per ration.

There does not appear to have been any fixed ration in the Colonies at that time, and the irregularities in the issue of provisions which prevailed at the conclusion of the war in 1815 gave rise to the warrant of 12th July 1816, which limited the ration of provisions in the Colonies, except Jamaica, to—

1 lb. bread or biscuit,
1 lb. meat, either fresh or salt,
1 pint wine, or
$\frac{1}{3}$ pint spirits,

with a stoppage of 6*d.* per ration.

Deviations were allowed in 1818 from this ration at the Cape of Good Hope, where the ration was—

At Head Quarters.	On the Frontier.
1 lb. bread,	1 lb. bread,
$1\frac{1}{4}$ lb. fresh meat,	$1\frac{1}{2}$ fresh meat,
$\frac{1}{4}$ lb. rice,	2 oz. flour.
$\frac{5}{7}$ oz. coffee, $1\frac{2}{7}$ oz. sugar, } in lieu of spirits.	

until 1826, when the fresh meat was reduced to 1 lb.

In the West Indies also the Treasury, in 1820, sanctioned the following ration,—

1 lb. bread,
1 lb. beef, fresh or salt, or
$9\frac{1}{7}$ oz. salt pork,
$1\frac{2}{7}$ oz. sugar,
$\frac{5}{7}$ oz. cocoa,
$\frac{1}{8}$ pint rum.

The provision warrant of 14th July 1827 altered the ration at stations abroad to—

1 lb. bread or biscuit,
1 lb. meat, either fresh or salt,
$\frac{3}{7}$ quart wine, or
$\frac{1}{7}$ quart rum,

except at those stations where on account of climate, or from local or temporary circumstances, a different ration might be sanctioned by the Treasury, the stoppage still remaining at 6*d.* per ration.

A deviation from this warrant occurred in the year 1828, when the West India ration before stated was extended to Bermuda.

By the warrant of 22d July 1830, the ration to the troops abroad was limited to—

1 lb. bread, or $\frac{3}{4}$ lb. biscuit,
1 lb. meat, either fresh or salt,

except in the cases provided in the warrant of 1827, and in consideration of the allowance of spirits granted by previous warrants having been discontinued, the stoppage from the soldier was reduced to 5*d.* per ration.

Between the years 1830 and 1850 a ration, generally known as the *Tropical Ration,* and composed as follows, viz.:—

1 lb. bread, or $\frac{3}{4}$ lb. biscuit, or $14\frac{2}{7}$ oz. flour,
1 lb. beef, either fresh or salt, or
12 oz. salt pork,
$1\frac{2}{7}$ oz. sugar,
$\frac{5}{7}$ oz. cocoa,
4 oz. rice, or
$\frac{1}{2}$ pint peas,

was issued at Bahamas, Bermuda, Honduras, Hong Kong, Mauritius, Jamaica, Sierra Leone, West Indies, and also at St. Helena, with the addition of $\frac{5}{6}$ pint wine, for which, however, the full stoppage of 6*d.* per ration was exacted at this station. In New South Wales and Van Diemen's Land, $\frac{1}{7}$ quart rum was issued in addition to the ration authorized by warrant of 1830, at a stoppage of 6*d.*

The warrant of 24th December 1850 restricted the ration to the troops at all stations, without exception, to 1 lb. bread, or $\frac{3}{4}$ lb. biscuit,
1 lb. meat, either fresh or salt,
and at the same time limited the stoppage to $3\frac{1}{2}d.$ per ration, the soldier being left to provide himself with such other articles of diet as might be necessary under regimental arrangements.

The only deviations from this warrant at present are at Hong Kong, where, for the health of the troops, the following ration was sanctioned in May 1856, viz.:—

1 lb. bread,
1 lb. meat, either fresh or salt,
2 oz. rice, or 1 ration preserved vegetables,
$\frac{1}{4}$ oz. tea,
$1\frac{1}{2}$ oz. sugar,
$\frac{1}{64}$ gall. rum,

for which the soldier pays a stoppage of $4\frac{1}{2}d.$

And also at an outpost at the Cape of Good Hope, where a ration composed of,—

1 lb. bread, or $\frac{3}{4}$ lb. meal,
$1\frac{1}{2}$ lb. fresh meat, or 1 lb. salt meat,
2 oz. rice,
1 oz. sugar,
$\frac{3}{4}$ oz. coffee,
$\frac{1}{12}$ gill salt,

is issued, for which a stoppage of 5*d.* is deducted.

Since the year 1816, the ration to the soldier in the Colonies has been provided by the Commissariat, except at Jamaica, where, until the year 1827, it was provided under the directions of the Colonial Assembly of that island.

Troops in the Field.

The present ration, as fixed by the warrant of 1850, is,—

$1\frac{1}{2}$ lb. bread, or 1 lb. biscuit,
1 lb. meat, either fresh or salt,

the stoppage being $3\frac{1}{2}d.$

The first record of a fixed field ration is in the warrant of 1830, which authorized the ration above quoted at a stoppage of 5*d.*, leaving to the discretion of the officer commanding the forces the issue of spirits *or any other article of subsistence*, on deducting an additional 1*d.* stoppage per ration.

A departure from the above ration occurred in the year 1848 at the Cape of Good Hope, where the troops in the field received a ration, of,—

1 lb. bread, or $\frac{3}{4}$ lb. meal, or 1 lb. biscuit,
$1\frac{1}{2}$ lb. fresh, or 1 lb. salt meat,
2 oz. rice,
1 oz. sugar,
$\frac{3}{4}$ oz. coffee,
} or an additional $\frac{1}{2}$ lb. fresh meat in lieu,
$\frac{1}{12}$ gill salt,
$\frac{1}{28}$ gall. spirits,

at a stoppage of 6*d.* with, or 5*d.* without, the spirits.

In the Kaffir war of 1850–53, in addition to the above ration, $\frac{1}{4}$ lb. tobacco and $\frac{1}{4}$ lb. soap, weekly, were issued at the same stoppage.

The warrant of December 1850 restricted the field ration to,—

$1\frac{1}{2}$ lb. bread, or 1 lb. biscuit,
1 lb. meat, either fresh or salt,

at a stoppage of $3\frac{1}{2}d.$, all other articles of diet to be provided under regimental arrangements.

It was, however, found necessary to deviate from the above regulation in the case of the army in the Crimea, where the ration issued to the British troops consisted of,—

$1\frac{1}{2}$ lb. bread, or 1 lb. biscuit,
1 lb. meat, either fresh or salt,
2 oz. rice,
2 oz. sugar,
1 oz. coffee, or $\frac{1}{4}$ oz. tea,
$\frac{1}{32}$ gall. rum,
1 oz. lime juice,
$\frac{1}{2}$ oz. salt,
$\frac{1}{4}$ oz. pepper,
} for every 8 men,

the stoppage being raised to $4\frac{1}{2}d.$

The issue of provisions to the troops in the field has always been made through the Commissariat.

Return of the various Hospital Stoppages from the Soldier.

In hospital at home - -	10*d.*
In hospital abroad - -	9*d.*
When sick on board ship -	6*d.*

In any of these situations, when a soldier is in hospital on account of wounds received in action, or from disease contracted when serving with an army in the field, the stoppage is only that prescribed for provisions supplied to the effective soldiers, viz.:—

$3\frac{1}{2}d.$ abroad, and
$4\frac{1}{2}d.$ at home.

Dates at which any Variation has been made since the Peninsular War.

It is understood that the above rates were those that have obtained, without change, ever since the early years of this century. The qualification as to wounds, &c., was granted by warrant of 1848 (W. O. Regulations, 1 July 1848).

APPENDIX XXVIII.

Memorandum by Sir C. E. Trevelyan, K.C.B., Assistant Secretary to the Treasury, on the Subject of Stoppages from the Pay of the Soldier.

The regulations under which the pay of the army is issued and accounted for urgently stand in need of reform.

The stoppages from the pay of the soldier for the rations supplied to him involve settlements of account of so operose and cumbrous a nature that, although they are gone through in time of peace, at the cost of an enormous waste of labour, the whole system is immediately abandoned at the breaking out of war. In the Caffre wars our commissariat officers reported that they had been unable to keep up the calculations which the system required in reference to the pay of every individual soldier belonging to the numerous detachments moving over the face of the country; and in the late Russian war the attempt was not even made, the Treasury having, at the commencement of the war, authorized the issue of the net regimental pay calculated on the aggregate number of men present with each regiment, without requiring any subsequent detailed settlement. When the soldier was charged with the actual cost of the ration, a periodical adjustment of the sum due by him was necessary; but he now pays a fixed amount for his ration both at home and abroad, and detailed adjustment is therefore no longer required. The practice has survived the occasion for it. A machinery applicable to a bygone state of things ought to be discontinued, and our arrangements should be adapted to the actual fact,—which is, that soldiers' wages consist of a net rate of pay, a free ration, free lodging, and various other advantages which are provided for him at the cost of the public.

Abroad, by Royal Warrant, 24 Dec. 1850.

At home, by Royal Warrant, 25 Feb. 1854.

There is another set of stoppages for officers and soldiers in hospital, which ought to be similarly dealt with.

And another set for officers and men on shipboard, which is the most objectionable of all, because it is complicated with the Naval Regulations, and with various arrangements connected with the different conditions under which messing is provided for the different ranks on board Queen's ships, transports, and freight ships.

Then there are the deductions from the bounty professed to be paid to recruits, which has been the occasion of much discontent, and of many imputations of breach of faith, and caused a mutiny at the recruiting depôt of the Land Transport Corps at Bristol in the late war.

And, lastly, the subsequent stoppages for "necessaries;" but these are closely connected with the interior regimental arrangements, and must therefore be treated with a more exclusive reference to military principles.

APPENDIX XXIX.

(*Given in by Commissary General Adams, C.B.*)

Estimated Cost of the Extra Articles proposed to be provided as Part of the Soldier's Ration.—(Qu. 3689–91)

	d.
Vegetables	0·625
Rice	0·174
Salt	0·008
Pepper	0·029
Coffee	0·750
Sugar	0·625
	2·211
The extra ¼ lb. bread	0·383
	2·594

Rum and lime juice are not taken into consideration in this estimate.

London, 12th June 1857.

G. Adams, Commissary General.

APPENDIX XXX.

(*Given in by Sir A. M. Tulloch, K.C.B.*)

Scheme of Dietary for Soldiers proposed by Colonel Sir A. M. Tulloch, K.C.B. (Qu. 6220-40.)

Breakfast.		Supper.	
Bread	8 oz.	Bread	8 oz.
Coffee	⅔ „	Tea	¼ „
Sugar	1 „	Sugar	1 „
Milk	1 gill	Milk	1 gill

Dinners.

No. 1. Irish Stew	Mutton	12	oz.
	Potatoes	16	„
	Onions	½	„
Rice Pudding	Rice	2⅔	„
	Milk	2⅔	gill
	Sugar	11	drams

No. 2. Salt Beef or Pork		12	oz.
Pease Soup	Pease	⅓	pint
	Onions	½	oz.
Colcannon	Potatoes	8	„
	Greens	8	„
Bread		5⅓	„

Dinners—*cont.*

No. 3.	Mutton, baked	12	oz.
	Potatoes	16	,,
	Yorkshire Pudding { Flour	5	,,
	Yorkshire Pudding { Suet	$\frac{1}{2}$	,,
No. 4.	Beef boiled	12	oz.
	Soup cont^g { Vegetables	8	,,
	Soup cont^g { Rice or Barley	2	,,
	Potatoes	16	,,
	Bread	$5\frac{1}{3}$	,,
No. 5.	Beef, baked	12	oz.
	Potatoes	16	,,
	Plum Pudding { Flour	$2\frac{1}{2}$	,,
	Plum Pudding { Raisins	1	,,
	Plum Pudding { Suet	1	,,
	Plum Pudding { Sugar	1	,,
No. 6.	Mutton, boiled	12	oz.
	Soup cont^g { Vegetables	8	,,
	Soup cont^g { Rice or Barley	2	,,
	Potatoes	16	,,
	Bread	$5\frac{1}{3}$	,,
No. 7.	Beef, stewed	12	oz.
	Vegetables	8	,,
	Potatoes	8	,,
	Bread	$5\frac{1}{3}$	,,
No. 8.	Soup made of the Head, Shanks, and Feet, Roast Heart, Fried Liver, And Tripe.		

Note.—Since Dr. Christison's analysis of this diet has been communicated to me, I propose to substitute, on the first day, suet for rice pudding, composed of 3 oz. of flour, one of suet, and about one of sugar; also to add to the seventh day's dinner $\frac{1}{2}$ lb. of potatoes and two oz. of cheese, to be eaten with the extra bread charged on that day, which would bring the nutritive properties of the diet to about the same average as for the rest of the week, and add only a small fraction to the expense.

APPENDIX XXXI.

ESTIMATE of the probable COST of the DIETARY for the SOLDIER, proposed by Colonel Sir A. M. TULLOCH, K.C.B., in his Evidence before the Commission, page 209, Qu. 6,220–40.

The minimum pay of the British soldier of infantry in the United Kingdom is 1*s.* 1*d.* per day, less $4\frac{1}{2}$*d.* for a ration of 1 pound of bread, and $\frac{3}{4}$ of a pound of meat, leaving a surplus of $8\frac{1}{2}$*d.* In the Colonies the pay is 1*s.*, less $3\frac{1}{2}$*d.* for a ration of 1 pound of bread and 1 pound of meat, leaving a like surplus as at home.

From this surplus have to be deducted $\frac{1}{2}$*d.* per day for washing, about 2*d.* per day for necessaries, barrack damages, sheet washing, and small charges, 1*d.* per day to buy beer at home or wine abroad, in lieu of the issue formerly made to the soldier in kind, and there should remain also 1*d.* per day for pocket-money, making a total of $4\frac{1}{2}$*d.*, leaving to be expended on messing, in addition to the ration, about 4*d.* per diem.

I shall first consider what portion of this requires to be applied to the breakfast and supper meal, viz. :—

BREAKFAST.	*d.*
Bread, 8 oz., charged in ration	-
Coffee, $\frac{2}{3}$ of an oz., at 9*d.* per lb.	$\frac{6}{16}$
Sugar, 1 oz. at 3*d.* per lb.	$\frac{3}{16}$
Milk, $\frac{1}{4}$ of a pint, at 1*d.* per quart	$\frac{2}{16}$
SUPPER.	
Bread, 8 oz., charged in ration	-
Tea, $\frac{1}{4}$ of an ounce, at 1*s.* 4*d.* per lb.	$\frac{4}{16}$
Sugar and milk as above	$\frac{5}{16}$
Total	$1\frac{4}{16}$*d.*

The sugar has been calculated at about 25*s.* per cwt., which is above the usual maximum price in the Navy. The tea has also been calculated considerably in excess of the Navy price, which is only about 11*d.* a pound; and the coffee has been taken at the price at which it was purchased by the Navy during the Russian war.

These supplies, however, are all estimated, *without duty*, as obtainable on foreign stations. It is presumed that when issued by the commissariat in this country, arrangements could be made for their being also duty free here; but if that cannot be conceded, and it is considered inexpedient for the messing charge at home to exceed that in the colonies, cocoa might be issued either in the morning or evening, in place of tea. Its cost being only $4\frac{3}{4}$*d.* a pound, and the duty as well as that on coffee and sugar being limited to a very small amount, the expense of the breakfast and supper at home would, by this change, be much the same as in the colonies. Assuming, then, the cost of these meals, excluding bread, at $1\frac{1}{4}$*d.* per day, there will remain $2\frac{3}{4}$*d.* to be expended in such additions as are required to make the three-fourths of a pound of meat at home, or 1 pound on foreign stations, provide a good and substantial dinner for the soldier.

The following is the arrangement of the dinners, by which it is proposed to effect this, keeping in view that when there is no pudding, one-third of a pound of extra bread would have to be purchased, as the ration quantity would be consumed at breakfast and supper.

The prices of the chief items of each dinner, exclusive of the ration, are based on the following estimate :—

- Potatoes, according to prices given in Navy Victualling List, 4*s.* 9*d.* a cwt., or about $\frac{1}{2}$*d.* a lb.
- Onions (per ditto) about $\frac{3}{4}$*d.* per pound.
- Other vegetables averaging, say $\frac{1}{2}$*d.* per lb.
- Bread, 2*d.* a lb.
- Flour, about 2*d.*
- Split pease, $1\frac{1}{2}$*d.* per lb.
- Rice, pearl barley, or sago, about 2*d.* a lb., the rice taken at the same price as purchased at the Royal Military Asylum.
- Suet, $7\frac{1}{2}$*d.*
- Raisins, $6\frac{1}{2}$*d.*

According to these prices, the dinner for the first day would cost,—

	d.
1 lb. of potatoes per man, to make Irish stew with the ration meat	$\frac{8}{16}$
Onions and herbs for seasoning, say	$\frac{1}{16}$
Baked rice pudding, according to cost at Military Asylum, reckoning the same quantity for 75 men as for 100 boys	1
Total	$1\frac{9}{16}$*d.*

For the second day,—

$\frac{1}{3}$ of a pint of pease to make pease soup with the pork	$\frac{8}{16}$
Onions and seasoning for ditto, say	$\frac{1}{16}$
$\frac{1}{2}$ lb. of potatoes, and $\frac{1}{2}$ lb. of greens mashed, to be eaten with the pork	$\frac{8}{16}$
$\frac{1}{3}$ of a pound of bread at 2*d.*	$\frac{11}{16}$
Total	$1\frac{12}{16}$*d.*

For the third day,—

1 pound of potatoes, to be placed under the baked or roast mutton	$\frac{8}{16}$
$\frac{1}{3}$ of a pound of Yorkshire pudding, according to cost at Military Asylum reckoning same allowance for 75 men as for 100 boys	1
Total	$1\frac{8}{16}$*d.*

	d.
For the fourth day,—	
½ a pound of vegetables for soup	$\frac{4}{16}$
2 ounces of rice, pearl barley, or sago, for thickening it	$\frac{4}{16}$
1lb. of potatoes to be eaten with the meat	$\frac{8}{16}$
⅓ of a pound of bread with soup	$\frac{11}{16}$
Total	$1\frac{11}{16}d.$
For the fifth day,—	
One pound of potatoes, to be placed under roast beef	$\frac{8}{16}$
One third of a pound of plum-pudding, comprised of the following materials:—	
3 lb. of flour, cost	6d.
1 lb. raisins (chopped fine)	$6\frac{1}{2}$
1 lb. suet	$7\frac{1}{2}$
1 lb. sugar	3
For 18 men	1s. 11d.
Being for each	$1\frac{5}{16}$
Total	$1\frac{13}{16}d.$
For the sixth day,—	
Same price as on fourth day, the only difference being mutton for the soup instead of beef	$1\frac{11}{16}d.$
For the seventh day,—	
Vegetables for stewing with beef ½ lb.	$\frac{4}{16}$
Potatoes ½ lb.	$\frac{4}{16}$
⅓ of a lb. of bread	$\frac{11}{16}$
Total	$1\frac{3}{16}d.$

The expense of the proposed eighth day's diet I need not go into, for that would be considerably less than under the present system, as the materials proposed to be made use of would otherwise be sold much under the usual cost of the ration.

The total cost of these several days dinners would therefore be under one shilling a week, or $1\frac{3}{4}d.$ a day in addition to the ration, leaving one penny a day still available to meet any increased cost, or where that did not occur, to add butter to the morning, or cheese to the evening meal, for the whole should be expended.

If the additional third of a pound of bread were dispensed with on four days in the week, and pudding added on every day, which probably the soldier would prefer, it would only cost the difference between $2\frac{2}{16}d.$, the price of $1\frac{1}{3}$ lb. of bread, and $4\frac{10}{16}d.$, the price of $\frac{1}{3}$lb. of plum-pudding for 2 days, and suet and rice-pudding on the other two. Even with this improvement in the diet the stoppage for dinner would only be 2d. a day instead of $1\frac{3}{4}d.$, leaving still about $\frac{3}{4}d.$ over.

For this important variety and improvement in the diet, it is only requisite that the orders already existing should be carried into effect by the soldier being messed up to the full amount authorized by regulations, and taught to exercise a little ingenuity in the preparation of his food, which, it is hoped, would prove a useful and pleasing variety in his duties.

A bakehouse would no doubt be required in every regiment, but the expense of it would soon be covered, and a great improvement effected, by some of the men learning to bake their own bread. The description of bread might then also be varied occasionally with advantage.

The commissariat would, under the proposed arrangement, have to be charged in future with the issue of flour, suet, rice, raisins, pease, sugar, barley, &c., as on shipboard, in addition to the usual ration of bread and meat, and for which extras, if $2\frac{1}{2}d.$ were to be added to the present price of the ration, making a total of 7d. at home, or 6d. in the colonies, it would leave 1d. per day for the soldier to supply himself with vegetables and milk, which it might be inconvenient and often difficult for a commissariat officer to provide satisfactorily.

In the field, however, a ration of preserved vegetables and preserved potatoes should be issued by the commissariat at a charge of 1d., whenever the soldier could not obtain these supplies in kind. Milk in such situations would probably not be obtainable.

To ensure the satisfactory working of these messing arrangements, the division of the meat into roasting, boiling, and stewing pieces would require to be carefully made. Those parts least adapted for roasting or stewing to be used for the days on which soup was made.

Difficulty might at first be experienced in cutting up the meat, so as to ensure the exact quantity to each mess in one piece, for it would be objectionable to have small pieces, which run to waste in cooking ; to obviate this, however, it might be arranged that any quantity short of a pound in the piece might be made up on the following day, the serjeant keeping a tally against the contractor ; any similar quantity in excess being adjusted in the same way. There need be no greater difficulty in this respect than the issue of salt beef or salt pork, which is given out in pieces as being of a certain weight, though often considerably below or over it.

If the quantity of meat which must necessarily be cut into small portions to give a proper size to roasting or boiling pieces be considerable, the eighth dinner might, instead of the other materials, occasionally be of meat pie, with a crust of flour and lard, which is always a favourite with the soldier, and would not add materially to the average cost of the messing.

This routine of messing is intended to apply to a battalion of eight companies, in which each company should have daily in succession the dinners here described, so that all might not be roasting, boiling, baking, or stewing, on the same day.

For a small detachment, there might be a difficulty in following this routine, but an exceptional case of this kind which might occur affords no good reason why our soldiers should not have as varied a diet when in large bodies as circumstances and the rate of their pay will admit.

(*See Note at end of preceding Appendix.*)

APPENDIX XXXII.

Observations on Sir A. M. Tulloch's proposed Scheme of Diets for Soldiers. By Dr. Christison.

I have examined the scheme of diets for soldiers proposed to the Commissioners by Sir A. M. Tulloch, with the view of ascertaining "whether it appears to "contain the carboniferous and nitrogenous consti- "tuents in the most desirable proportions ;" and I append the numerical results.

In making the calculations I have used ascertained data as to the composition of most of the articles in the several diets. I have been obliged, however, in absence of experimental data, to assume conjecturally the constitution of raisins and onions ; and I have assumed the nutritive constitution of salt meat to be the same as that of fresh meat. Raisins and onions form only a very small proportion of the dinners of which they are a part, so that there can be no serious error under these heads. But it is certain that salt meat is not so nutritive as fresh meat. Since there are no data, however, whether scientific or practical, for determining, even approximately, the total nutriment, or the relative carboniferous and nitrogenous nutriment of salt meat, I do not see what other method I can well follow except to use the data for fresh meat, with the reservation now attached.

The first Table shows the carboniferous, nitrogenous, and total true nutriment in the seven different dinners, and separately the same nutritive constitution of the breakfast and supper conjunctly, which do not vary from day to day.

The second Table shows the constitution of the diets for the whole day during seven successive days That of the diet for the eighth day, of course, cannot be computed, as data cannot be supplied.

Table First.

Showing the Nutritive Constitution, in ounces, of the several Dinners of the proposed Scheme of Diet, and of the daily Breakfast and Supper conjunctly.

—	Carboniferous Nutriment.	Nitrogenous Nutriment.	Total Nutriment.
	oz.	*oz.*	*oz.*
First dinner	8·05	3·44	11·49
Second do.*	10·09	4·54	14·63
Third do. -	9·77	3·63	13·40
Fourth do. -	10·33	3·81	14·14
Fifth do. -	9·74	3·23	12·97
Sixth do. -	10·33	3·81	14·14
Seventh do.	7·04	3·21	10·25
Breakfast and Supper -	11·04	2·13	13·17

Table Second.

Showing the Nutritive Constitution, in ounces, of the whole daily Food on seven successive days.

—	Carboniferous Nutriment.	Nitrogenous Nutriment.	Total Nutriment.
	oz.	*oz.*	*oz.*
First day -	19·09	5·57	24·66
Second do. -	21·13	6·67	27·80
Third do. -	20·81	5·76	26·57
Fourth do. -	21·37	5·94	27·31
Fifth do. -	20·78	5·36	26·14
Sixth do. -	21·37	5·94	27·31
Seventh do.	18·08	5·34	23·42

* Note.—The peas for this dinner I assume to be split peas, which weigh 7,100 grains, or almost exactly a pound per pint.

These several diets approach on the whole nearly in total real nutriment to the allowances for the British Navy, which contain 28½ ounces of daily nutriment on an average, and which have been found very suitable. The diet of the first and seventh days alone are materially less. It would require an addition of four ounces of meat and four ounces of bread to make them equal to the Navy allowances. This addition would raise their nutritive value as follows:—

	oz.	*oz.*	*oz.*
First day -	21·75	6·70	28·45
Seventh do -	20·74	6·56	27·30

The relative proportion of the carboniferous to the nitrogenous nutriment of the seven diets approaches nearly to that which scientific analysis has shown to be very exactly the proportion in the dietaries hitherto examined, which have been practically found satisfactory, viz., the ratio of three to one. Every day's allowance, however, appears appreciably short of this proportion, except the second; and the closer approach of that day's diet depends on the nutritive value which I have assumed for salt meat, and which I have admitted to be over-estimated. The diet of the first, fifth, and seventh days deviates most from the general rule. Each of these ought to present about one ounce more of real nitrogenous nutriment, to bring it under the rule. In every way Nos. 1 and 7 therefore appear rather defective.

I will not say positively that in practice these occasional deficiencies would tell on the actual nourishment of the men. But equally from scientific analysis and from past practical observations, it is probable that they would do so. It is easy, however, to test the fact by experiment, viz., by weighing the men of a company in each of several regiments at the end of the fourth and eighth weeks. And, indeed, if I may be permitted to advise in this matter, I would recommend that this test should be applied, whatever scheme of diet may be ultimately adopted.

I apprehend I am to assume that the proposed diets are intended for soldiers in ordinary circumstances. When they have to encounter prolonged fatigue, exposure, and defective sleep, a larger allowance is necessary. Nothing can be more certain, at least, than that, in civil life, the nutriment must rise materially with the bodily exercise, exposure, and night-watching, otherwise work cannot be done so well, and the seeds of disease are ultimately sown.

Edinburgh,
11th November 1857.

APPENDIX XXXIII.

(From the Report of the Crimean Commissioners.)

Observations on a Report by Sir John McNeill, relative to the Rations for Soldiers.
By Dr. Christison.

In consequence of the advances made in physiology and chemistry, the nutritive value of any dietary, deduced from practical experience, may be tested with care and certainty by reference to its chemical composition. As this fact is little known to practical men, it may be well to explain the principles on which the method is founded.

1. All articles of food used by man consist of one or more, and generally several nutritive principles; and most of them contain water and an indigestible cellular tissue. The two latter must, of course, be deducted in estimating nutritive value.

2. The nutritive principles consist of two sets—one of which maintains respiration, and the other repairs the waste constantly incurred by the animal textures in the exercise of their functions. As the respiratory principles commonly abound in carbon, they are sometimes called carboniferous, while the reparative principles, because they all contain nitrogen, are termed nitrogenous.

3. Experience has shown that the most successful dietaries for bodies of men, deduced from practical observation, contain carboniferous and nitrogenous food in the proportion of about three of the former to one of the latter, by weight. During two-and-twenty years that my attention has been turned to the present subject, not a single exception has occurred to me.

4. Hence it is obvious that the least weight of food in the rough state will be required, first, when there is least moisture and cellular tissue in it; and secondly

when the carboniferous and nitrogenous principles are nearest the proportion of three to one.

5. Of the various nutritive principles belonging to each set, some may replace one another; some are better than others; some are probably essential. This branch of the science of the subject is unfortunately still imperfect.

6. Two things, however, are certain—that nitrogenous may replace carboniferous food, for supporting respiration, though at a great loss; but that carboniferous food (without nitrogen) cannot replace nitrogenous food, for repairing textural waste.

7. The daily amount of nutritive principles of both sets must increase with exercise and exposure, otherwise the body quickly loses weight, and ere long becomes diseased. If the above proportion between the two sets be maintained, the weight of real nutriment per day varies, for adults at an active age, between seventeen and thirty-six ounces; the former being enough for prisoners confined for short terms, the latter being required for keeping up the athletic constitution, or that which is capable of great continuous muscular efforts, as in prize-running and other similar feats.

8. Dietaries ought never to be estimated by the rough weight of their constituents, without distinct reference to the real nutriment in these, as determined by physiological and chemical inquiry.

Keeping these principles in view, and with the help of a simple table, it is not difficult to fix the dietary advisable for any body of men, according to their occupation. It is, also, in general, easy to detect the source of error in unsuccessful dietaries. For example, any scientific person conversant with the present subject could have foretold, as a certain consequence, sooner or later, of their dietary, that the British troops would fall into the calamitous state of health which befell them last winter in the Crimea.

Soldiers in the field will be the more efficient the nearer they are brought to the athletic constitution. But as the demand for protracted, unusual exertion occurs only at intervals, the highly nutritive athletic dietary is not absolutely necessary. On the whole, from experience in the case of other bodies of men somewhat similarly circumstanced, 28 ounces of real nutriment, of which 7 are nitrogenous or reparative, will probably prove the most suitable. Any material reduction below 28 ounces will certainly not answer; and under unusual exertion kept up for days continuously, as in forced marches, or forced siege labour, the quantity should for the time be greater, if possible.

The dietary proposed in the report put before me corresponds very closely, in all respects, with the principles now laid down.

The articles are well chosen. The standard ration contains $20\frac{1}{7}$ ounces of carboniferous, $6\frac{1}{5}$ of nitrogenous, and therefore $26\frac{1}{3}$ of total real nutriment. When biscuit and compressed vegetables are substituted for soft bread and fresh vegetables, the day's ration consists of $19\frac{4}{5}$ carboniferous food, $6\frac{2}{3}$ nitrogenous, and $26\frac{1}{5}$ total.

In both of these scales, the proportion of the two sets of principles is nearly as three to one. In both, the total quantity falls a little short of what appears the most advisable. In all other respects the dietary seems unexceptionably good. It cannot be said that the deficiency will certainly occasion ill health; but there is too little to keep up the strength and energy of the men in circumstances of unusual exertion. The following is an apt illustration:—In the general prison at Perth, the dietary for long terms of imprisonment consists of 19 ounces of carboniferous, and 6 ounces of nitrogenous food; in all, 25 ounces. Now, in the first place, it has been found unsafe to reduce this amount for ordinary sedentary occupations; but, secondly, prisoners under vigorous exercise are found to require a material increase. Some years ago, when I was appointed to inquire into certain points relative to the management of the prison, there were several men employed at the pumps for raising water daily from the Tay for prison use—an occupation requiring much expenditure of muscular strength. These men were, without exception, compelled to desist when fed on 25 ounces a day. An addition of 8 ounces of meat and 6 ounces of bread was found necessary, and then they all worked vigorously and cheerfully. This raised their allowances to $23\frac{1}{2}$ ounces of carboniferous, and $8\frac{1}{2}$ of nitrogenous food, or 32 ounces in all.

The standard difficulty in regulating the dietary of soldiers in the field is the present necessity of substituting salt meat for fresh, when it becomes necessary to use only store provisions. The difficulty arises from the known tendency of salt meat to engender disease, or at least to favour its development, and the supposed impossibility of storing effectual substitutes for it. A third difficulty must be here admitted:—Neither by physiological experiment, nor by chemical analysis, is the nutritive value of salt meat scientifically known.

If soldiers could be supplied with what people in civil life know as salt meat, there would be less difficulty; but military authorities ought to disabuse their minds of this very natural comparison. The salt meat for soldiers in the field has always been highly salted, in order to keep for two years or more in every climate. Now, my persuasion is that, apart from the tendency of the protracted use of such food to favour the development of disease, its nutritive value has been much overrated. This may appear evident from the fact stated in the Report, that of a body of men, fed even on rations by no means liberal, few continued to eat a pound of salt meat daily for any length of time. And the science of the question has been sufficiently looked into for an explanation; because meat highly salted must be so thoroughly steeped in cold water, to remove the salt, before it is eatable in large quantity, that much of its most nutritive constituents must be washed out, viz. its albumen, and sapid extract called osmazôme.

Therefore it appears a good suggestion in the Report put before me to deduct four ounces from the ration of salt pork and salt beef, and to substitute half a pint (eight ounces) of peas instead of the four ounces of pork; and, for the four ounces of beef, six ounces of flour, an ounce of currants or raisins, and half-an-ounce of lard, for making a pudding. Besides qualifying the irksomeness and probable injurious effects of the daily salt meat, this substitution—which will be made chiefly during protracted marches, or other active operations at a distance from head stores, and when more food is needed to meet greater muscular efforts—raises the daily allowances to $23\frac{2}{3}$ ounces of carboniferous, $7\frac{1}{2}$ nitrogenous, and $31\frac{1}{10}$ total nutriment, under the peas ration; and to $24\frac{1}{3}$, 6, and $30\frac{1}{3}$ ounces under the flour-pudding ration. In these estimates, however, the salt meat is assumed to equal fresh meat in nutritiveness—an extremely dubious assumption; but there is no authority by which to fix its true value.

It is much to be desired that a more material reduction of the salt meat could be effected. Nor does this seem impossible. Three substitutes have been proposed: preserved meat, pemmican, and meat-biscuit.

The first of these consists of fresh meat, cooked and preserved hermetically in vacuo in tin cases. At present, a prejudice against it has arisen from the late discovery of abominable frauds in our navy contracts. But this is unreasonable. Such frauds could not have been practised, except under a system of very lax examination on delivery. It is not to be doubted that meat may be preserved in vacuo certainly and securely, and the process is not now very costly. The men would probably object to the frequent use of it, because it palls on the taste; but it would be taken once a-week readily, when fresh provisions are scarce, and even twice a week when no other fresh animal food can be had.

Pemmican is meat thoroughly dried up by a cooking heat, and generally beat up with a proportion of fat. I understand it is said to be objected to on account of manufacturing difficulties, and its tendency to deteriorate in a temperate, and still more in a warm

climate. But in these days of manufacturing ingenuity, one ought to be very slow to admit such an obstacle; nor can I see where any unconquerable difficulty can lie. Probably it would not be relished continuously by the men, but it would be taken readily as an occasional ration, at all events once a-week; and I am persuaded that, were the skill of the cook united with the art of the manufacturer, a more palatable article than common pemmican might be produced. It is of moment to consider that, were it found practicable to introduce this as an article of meat rations, a great saving would be effected over fresh meat, salt meat, or preserved meat, in weight, and consequently in transport, for pemmican contains the nutriment of at least three times its weight of fresh meat.

Meat-biscuit—consisting, I believe, generally of the ordinary biscuit materials baked with extract of meat—was tried, as I am aware, by some of our officers in the Crimea. but found to be often spoiled in store or transport. There must have been some palpable error, however, in either its composition or preservation; at least, a similar article was used successfully by some in the Burmese war. I see no difficulty on the part of a skilled manufacturer in preparing a meat-biscuit with biscuit-flour, dried meat instead of meat-extract (as being both more nutritive and cheaper), fat, salt, and pepper, which, on being thoroughly dried, might be perfectly preserved in tins, and which would constitute a highly nutritive and not unpalatable article of food. It could be easily converted into soup, either alone or with the help of compressed vegetables. It would also be, in its biscuit state—the meat being cooked in the manufacture—a good resource for the men when turned out suddenly in the early morning, and without the opportunity of cooking their breakfast. And, like pemmican, it could be easily transported, as it consists almost entirely of nutriment, with extremely little moisture. Probably the men might not like to use it continuously; but in urgent circumstances, as on forced marches, it ought to prove of great service; and in circumstances less urgent it might be made the meat-ration of one day in the week, or possibly even two days.

On the whole, it is very desirable that careful experiments were made as to the preparation and preservation of pemmican and meat-biscuit. Such experiments ought not to be left entirely to practical men; scientific knowledge and practical skill should be combined; otherwise, serious errors may be committed.

In the proposed dietary, no mention is made of cheese among the substitutions for the standard articles. It is excellent, however, theoretically as an occasional substitute for meat, to qualify an otherwise too farinaceous food, because it consists, in a great measure, of an important nitrogenous principle. Then, it has well-ascertained practical advantages. It is not costly; it is easily preserved for a time; it is all nutriment, and therefore cheap to transport; it is relished by all hard-working people; and there is reason to suppose that it constitutes an effective article of some successful dietaries in civil life.

Peas should be supplied, if possible, in the state of flour, when intended for part of the rations of troops on active service in the field. They are then much more easily cooked, as well as more compactly packed and more easily served out.

When practicable, half a pint of porter (ten ounces) would form a most desirable substitute for the ration of spirits. The nutriment is much the same, viz., one ounce, but the alcohol is only one-half; and nevertheless, its renovating power is greater. All officers engaged in active service in India, especially during the occasional privations in the late Burmese war, have borne strong testimony to the superior advantages of malt liquor over spirit.

It is difficult to over-value the proposed addition of tea and coffee to the men's rations. They possess a renovating power, in circumstances of unusual fatigue, which is constantly experienced in civil life, and which I have often heard officers, who served in the Spanish campaigns, as well as in the late Burmese war, describe in the strongest terms. This, however, is not all, for it has been recently shown by a very curious physiological inquiry, that both of them, and especially coffee, possess the singular property of diminishing materially the wear and tear of the soft textures of the body in the exercise of its functions in an active occupation.

Edinburgh, 29th December 1855.

APPENDIX XXXIV.

(*Furnished by Order of the Secretary of State for War.*)

RETURN showing the AMOUNT of CLOTHING and NECESSARIES supplied to the SOLDIER at HOME and ABROAD.

I.—ARTICLES of CLOTHING provided by the PUBLIC for the ARMY.

HOME.	COLONIES.
Heavy Cavalry.	
1 Helmet every 6th year. 1 Tunic annually. 1 Pair overalls, ditto.	The same as at home.
Light Dragoons and Lancers.	
1 Cap every 4 years. 1 Tunic annually. 1 Pair overalls, ditto. 1 Cap cover biennially.	Ditto.
Hussars.	
1 Busby every 4 years. 1 Tunic annually. 1 Pair overalls, ditto. 1 Cap cover biennially.	Ditto.
Royal Horse Artillery and Riding Troop.	
1 Busby quadriennially. 1 Dress jacket annually. 1 Pair overalls, ditto. 1 Pair boots, ditto. 1 Pair leather gloves, ditto. 1 Pair spurs biennially.	Ditto.

Home.	Colonies.
Royal Artillery.	
1 Busby quadriennially. 1 Tunic annually. 1 Pair trousers, ditto. 1 Pair boots, ditto.	When at Ceylon, Hong Kong, Mauritius, St. Helena and West Indies (except Bermuda) :— 1 Busby quadriennially. 1 Tunic, 1 Pair cloth trousers, 1 Undress jacket, 2 Pair serge trousers, } biennially. 1 Pair boots, annually. In the years in which the tunic is not issued compensation in money is granted to each man, to be expended by the Officer commanding for the benefit of the Soldier in articles best suited to the climate.
Gun Lascars.	
	1 Cap biennially. 1 Tunic, ditto. 1 Pair cloth trousers, ditto. 1 Undress jacket, ditto. 2 Pair serge trousers, ditto. A money allowance in lieu of boots, annually.
Royal Engineers.	
Uniform. 1 Tunic yearly 1 Pair trousers, ditto. 1 Busby every 4 years. 1 Pair boots yearly. *Working Dress.* 1 Working jacket yearly. 1 Pair do. trousers, ditto. 1 Do. do. boots, ditto.	When at Ceylon, Hong Kong, Mauritius, St. Helena, West Indies (Bermuda excepted), the uniform clothing and boots are issued as at other stations. The boots belonging to the working dress are issued yearly as at other stations. The working dress is issued biennially, and in the year in which it is not issued compensation in money is granted to each man to be expended in articles best suited to the climate.
Foot Guards.	
1 Bearskin every six years. 1 Tunic, annually. 1 Waistcoat, ditto. 1 Pair trousers, ditto. 1 Pair boots, ditto. 1 Pair buckskin gloves for sergeants, ditto. 1 Sash every 4 years, for Sergeants.	
Regiments of Foot.	
1 Tunic annually. 1 Pair cloth trousers, ditto. 1 Chaco biennially. Boots { Sergeants, 2 pairs / Privates, 1 ditto } annually. 1 Sash every 4 years, for Sergeants.	When serving at Gibraltar, Mediterranean, North America, Bermuda, Cape of Good Hope, New Holland, and Van Diemen's Land, the same clothing is supplied. When in the East Indies, Ceylon, St. Helena, Mauritius, and Hong Kong the clothing issued is as follows :— 1 Chaco biennially. 1 Tunic, ditto 1 Shell jacket biennially in the year in which Tunics are not supplied. 1 Pair cloth trousers yearly. 1 Pair boots, ditto. 1 Sash for Sergeants every 4 years. A money allowance is granted to each man at these Stations for the difference between the value of the tunic and shell jacket in the year in which the former is not issued, to be expended in articles of clothing best adapted to the climate. When serving in the West Indies (except Bermuda) the following clothing is issued :— 1 Chaco biennially. 1 Tunic annually. 1 Pair serge trousers annually. Boots—Sergeants, 2 pairs annually. Other ranks 1 pair, ditto. Cotton socks—Sergeants 3 pairs annually. Other ranks 2 pairs, ditto.

Home.	Colonies.
Highland Regiments—Wearing the Kilt.	
1 Coat annually. 1 Waistcoat with sleeves annually. 1 Pair shoes, ditto. 15*s.* 6*d.* for each sergeant, and 8*s.* 6*d.* for each private towards the provision of Highland articles annually.	Highland Regiments abroad receive the same clothing as they do at home, except when stationed in the East Indies, Ceylon, Mauritius, or St. Helena, in which cases the coat is supplied biennially, and in the alternate years the Soldier receives its value in money.
Highland Regiments—Wearing Trews.	
1 Coat annually. 1 Waistcoat with sleeves, ditto. 1 Pair boots, ditto. 13*s.* 6*d.* for each sergeant, and 6*s.* 6*d.* for each private towards the provision of Highland articles annually. Mem.—This money allowance is about to be done away, and the articles of Highland equipment supplied in kind.	Ditto.
Ceylon Rifle Regiment.	
	1 Chaco for European N. C. officers and Malay companies biennially. 1 Dress jacket, 1 Undress jacket, 1 Pair trousers } for European N. C. officers } annually. 1 Undress jacket, 1 Dress jacket, 1 Pair trousers } for Native N. C. officers and men { biennially at Ceylon, annually at Hong Kong. 12*s.* in money to each sergeant, and 8*s.* to each soldier of other ranks, annually in lieu of boots.
Cape Mounted Rifles.	
	1 Chaco and cover biennially. 1 Tunic, ditto. 1 Stable jacket, ditto. 1 Flannel waistcoat, ditto. 2 Pairs gloves, ditto. 1 Pair boots and spurs, ditto. 1 Pair overalls annually.
West India Regiments.	
	1 Fez and 2 turban cloths biennially. 1 Jacket annually. 1 Waistcoat, ditto. 1 Pair Turkish trousers, ditto. 1 Pair leather leggings biennially. 1 Pair sandals annually. Mem.—This is the new dress to be adopted for the future.
Royal Malta Fencibles.	
	1 Chaco triennially. 1 Tunic every 18 months 1 Pair cloth trousers, ditto. A money allowance in lieu of boots, ditto. Sashes every four years.
Hospital Corps.	
1 Cap every two years. 1 Tunic yearly. 1 Pair trousers, ditto. 1 Pair boots, ditto, (2 for sergeants).	The same clothing as at home.
Military Train.	
1 Cap every four years. 1 Tunic annually. 1 Pair overalls, ditto.	The same clothing as at home.

II.—Necessaries supplied gratis to each Recruit as a first issue, and kept up afterwards at the Expense of the Soldier.

Home.	Colonies.
Cavalry.	
1 Corn bag.	
1 Stable bag.	
1 Pair braces.	
Brushes, 1 Button.	
1 Clothes.	
1 Hair.	
1 Brass.	
1 Horse.	
1 Lace.	
1 Shaving.	
2 Shoe.	The same as at home.
2 Pair of boots.	
1 Tin of blacking.	
1 Brass ball.	
1 Forage cap and strap.	
1 Hair comb.	
1 Curry comb.	
2 Pair cotton drawers.	
1 Girdle, for Lancers only.	
1 Pair gloves for Heavy Cavalry and Lancers.	
2 Do. for Hussars and Light Dragoons.	
1 Pair gauntlets for Heavy Dragoons and Lancers.	
3 Pair woollen half-hose.	Cotton in India.
1 Holdall.	
1 Horse log.	None in India.
1 Horse picker.	
1 Horse rubber.	
1 Stable jacket.	
1 Knife, fork, and spoon.	
1 Pair overalls strapped.	
1 Piece pipe-clay.	
1 Razor.	
3 Shirts cotton, or 2 flannel.	
Pipe-clay sponge.	
1 Pair spurs.	The same as at home.
1 Do. scissars.	
1 Water sponge.	
1 Button stick.	
1 Stock.	
2 Towels.	
1 Pair linen stable trousers.	
1 Turnscrew.	
2 Flannel waistcoats.	
1 Valise.	
1 Oil bottle and oil.	1 Helmet cover for India.
1 Web sureingle.	The same as at home.
Mess tin and cover, when ordered for Service.	
Royal Artillery.	
1 Canvas bag and hook.	
1 Shaving bag.	
1 Tin blacking.	
1 Pair Boots.	
1 Pair trousers, fatigue.	
1 Pair of braces.	
Brushes, 1 Clothes.	
1 Button.	
1 Hair.	
1 Shaving.	
2 Shoe.	
1 Canteen.	The same as at home.
1 Ditto cover.	
1 Forage cap.	
1 Large comb.	
1 Pair leather gloves.	
1 Holdall.	
1 Fatigue jacket.	
1 Knapsack.	
1 Knife, fork, and spoon.	
1 Pocket knife.	
1 Plume case.	
1 Razor and case.	

Home.	Colonies.
Royal Artillery—continued.	
3 Cotton shirts and 2 flannel. 1 Sponge. 1 Stock. 3 Pair wool stockings. 1 Button stick. Straps, 1 Canteen. 1 Great coat. 2 Towels.	The same as at home.
Royal Engineers.	
1 Tin blacking. 1 Pair boots. 1 Pair braces. Brushes, Button 1. Clothes 1. Shaving 1. Shoe 3. Hair 1. 1 Brass ball. 1 Forage cap. 1 Knapsack cloth. 1 Comb. 1 Holdall. 1 Fatigue jacket. 1 Pair fatigue trousers. 1 Clasp knife. 1 Knapsack. 1 Knife, fork, and spoon. 1 Mess tin and cover. 1 Plume case. 1 Pair gloves. 1 Razor. 3 Shirts, cotton, or 2 flannel. 2 Flannel waistcoats. 1 Sponge. 1 Button stick. 1 Stock. 3 Pair stockings. 1 Soap case. 1 Waterproof bag. 2 Towels.	The same as at home.
Infantry of the Line.	
1 Tin blacking. 1 Pair boots. 1 Pair braces. Brushes, 1 Button. 1 Clothes. 1 Shaving. 2 Shoe.	The same as at home.
1 Forage cap.	With peak for India, West Indies, Cape of Good Hope, and Mediterranean.
1 Comb. 1 Holdall. 1 Fatigue jacket. 1 Knapsack. 1 Knife, fork, and spoon. 1 Mess tin and cover 1 Pair mitts. 1 Razor. 2 Flannel or 3 cotton shirts. 3 Pair worsted socks. 1 Sponge. 1 Button stick. 1 Stock.	The same as at home. 2 Pair linen trousers for troops in India.
2 Towels. 1 Pair fatigue trousers.	The same as at home.
Highland Regiments.	
1 Bonnet.	The same as at home.
Regiments wearing the kilt. 1 Pair gaiters. 1 Pair garters and rosettes. 3 Pair tartan hose. 1 Kilt. 1 Plaid. 1 Purse and belt. 1 Pair shoes and buckles. 1 Pair fatigue trousers.	The same as at home.

Home.	Colonies.
Highland Regiments—continued.	
Regts. wearing trews. { 1 Pair boots. 3 Pair socks. 2 Pair trews	
1 Tin blacking.	
1 Pair braces.	
Brushes, { 2 Shoe 1 Clothes. 1 Button. 1 Shaving.	The same as at home.
1 Forage cap.	
1 Comb.	
1 Holdall.	
1 Knapsack.	
1 Knife, fork, and spoon.	
1 Mess tin and cover.	
1 Pair mitts.	When required by climate.
1 Razor	
3 Shirts, linen, or 2 flannel.	
1 Sponge.	
1 Cake soap.	The same as at home.
1 Button stick.	
1 Stock and clasp.	
2 Towels.	
Hospital Corps.	
1 Tin, blacking.	
1 Pair boots.	
1 Do. braces.	
Brushes, { 1 Button. 1 Clothes. 1 Shaving. 1 Shoe.	
1 Forage cap.	
1 Comb.	
1 Holdall.	
1 Knapsack.	
1 Knife, fork, and spoon.	
1 Mess tin and cover.	The same as at home.
1 Pair mitts.	
1 Razor.	
3 Cotton or 2 flannel shirts.	
3 Pair worsted socks.	
1 Sponge.	
1 Button stick.	
1 Stock.	
2 Towels.	
1 Fatigue suit.	
Military Train.	
1 Corn bag.	
1 Stable bag.	
1 Pair braces.	
Brushes, { 1 Button. 1 Clothes. 1 Hair. 1 Hard. 1 Horse. 1 Lace. 1 Shaving. 2 Shoe.	
2 Pair ankle boots.	The same as at home.
1 Tin blacking.	
1 Brass ball.	
1 Forage cap.	
1 Hair comb.	
1 Curry comb.	
2 Pair cotton drawers.	
2 Do. gloves.	
3 Do. wool half hose.	
1 Holdall.	
1 Horse bag.	
1 Do. cloth.	
1 Do. picker.	

Home.	*Military Train—continued.*	Colonies.
1 Horse rubber. 1 Stable jacket. 1 Knife, fork, and spoon. 1 Pair overalls. 1 Piece pipeclay. 1 Razor. 3 Cotton or 2 woollen shirts. 1 Pipeclay sponge. 1 Pair spurs. 1 Do. scissars. 1 Water sponge. 1 Button stick. 1 Stock. 2 Towels. 1 Pair linen and table trousers. 1 Turnscrew. 2 Flannel waistcoats. 1 Valise. 1 Bottle, tin, and oil.		The same as at home.

Mem.—The Winter Equipment of Troops in North America consists of

1 Fur cap.
2 Flannel waistcoats.
2 Pair flannel drawers.
1 Do. Canadian boots.

These articles are supplied at the public expense in the following manner:—
An issue of 30*s.* is made to each man on his arrival in North America, and 5*s.* a year afterwards to enable him to provide and keep up the above articles.

May 25, 1857. GEO. D. RAMSAY.

APPENDIX XXXV.

(Prepared by the Secretary from Official Documents.)

Return showing the Amount of Accommodation in each Barrack in the United Kingdom, with the Number of Men apportioned to each Room and the Cubic Space allowed for each Man; the Number of Wards in the Hospitals, the Number of Patients allotted to each Ward, with the Cubic Space allowed for each Patient, as stated in a Return to the House of Commons made by the Barrack Department in 1848.

I.—ENGLAND AND WALES.

Station.	Barrack.	The No. of Men each Barrack is calculated to accommodate.	No. of Men's Rooms in the Barrack.	No. of Men in Room		Cubic feet of space allowed for each Man.		Hospital.				
				Highest No.	Lowest No.	Max.	Min.	No. of Wards.	No. of Patients in a Ward.		Cubic feet of space for each Patient.	
									Highest No.	Lowest No.	Max.	Min.
Newcastle-upon-Tyne	- - - -	474	—	—	—	606		12	6	1	935	536
Tynemouth	- - - - -	236	—	—	—	423		5	9	4	662	548
Sunderland	- - - - -	316	—	—	—	—	—	4	8	6	599	504
Carlisle Castle	- - - - -	294	—	—	—	484		3	10	4	448	406
Hull Citadel	- - - - -	506	49	12	10	315	273	3	14	8	1,106	702
Scarboro' Castle	- - - - -	126	13	10		319		—	—	—	—	—
York	- - Cavalry - -	276	28	8		552		4	12	4	594	480
Leeds	- - „ - - -	360	36	12		540		4	11	2	581	547
Bradford	- - Cavalry and Infantry -	142	12	18	6	759	375	3	4		646	580
Manchester	- - Cavalry - -	396	39	9		545		7	7	3	1,121	1,018
„	- - - Infantry - - -	859	56	16	14	536	489	11	12	1	1,265	654
Preston	- - - - -	1,203	—	—	—	574		14	9	2	826	605
Ashton-under-Lyne	- - - - -	340	—	—	—	574		4	9	6	805	782
Bury	- - - - -	340	—	—	—	573		4	9	6	805	782
Chester	- - - - - -	292	—	—	—	539		4	10	2	665	513
Burnley	- - - - - -	258	—	—	—	366		3	9	3	494	424
Stockport	- - - - - -	166	—	—	—	434		5	11	3	594	560
Sheffield	- - - - - -	165	—	—	—	331		4	9	3	507	392
Castletown, Isle of Man	- - - - - -	74	—	—	—	411		3	4	4	632	427
Birmingham	- - - - - -	201	—	—	—	523		3	10	5	646	551
Coventry	- - - - - -	198	—	—	—	—	—	2	10		950	
Weedon	- - Lower Barracks -	508	—	—	—	449		—	—	—	—	—
„	- - Upper „ - -	451	—	—	—	538		6	12	3	970	410
Northampton	- - - - - -	218	—	—	—	514		2	9	8	415	409
Nottingham	- - - - - -	178	—	—	—	430		3	12	6	693	655

Return showing the Amount of Accommodation in each Barrack in the United Kingdom, &c.—*continued.*

I.—England and Wales—*continued.*

Station.	Barrack.	The No. of Men each Barrack is calculated to accommodate.	No. of Men's Rooms in the Barrack.	No. of Men in a Room.		Cubic feet of space allowed for each Man.		Hospital.				
				Highest No.	Lowest No.	Max.	Min.	No. of Wards.	No. of Patients in a Ward.		Cubic feet of space for each Patient.	
									Highest No.	Lowest No.	Max.	Min.
Ipswich	Cavalry	186	22	8	6	467	452	4	10	3	729	428
Norwich	„	234	26	8	8	541	443	4	10	5	456	325
Harwich	Circular redoubt	94	6	16	15	496	465	—	—	—	—	—
„	Landguard Fort	161	26	16	4	605	236	16	6	4	561	417
Chatham	Infantry	2,784	173	—	—	350	219	26	15	5	735	324
„	St. Mary's Casemates, Invalids	840	77	—	—	375	243	—	—	—	—	—
„	Spur Battery Casemates	—	—	—	—	—	—	8	7	4	779	445
„	Fort Pitt, General Hospital	—	—	—	—	—	—	11	26	8	713	357
„	„ Casemates	—	—	—	—	—	—	9	23	5	1,445	236
Brompton	Ordnance and Infantry	1,397	162	—	—	450	243	5	13	5	487	455
Upnor	Infantry	66	11	—	—	425	220	—	—	—	—	—
Maidstone	Cavalry	360	24	—	—	500	174	5	14	7	1,176	882
Gravesend	Infantry	119	—	—	—	294		1	12		532	
Tilbury Fort	„	180	19	—	—	381	308	4	10	5	568	462
Sheerness	„	349	45	—	—	441	338	3	15	5	714	513
Portsmouth	Artillery	175	7	27	20	578	387	3	14	5	768	560
„	Colewart	268	15	16		348		—	—	—	—	—
„	Cambridge	361	18	22	18	550	342	—	—	—	—	—
„	Fourhouse	303	13	23		518	401	—	—	—	—	—
„	Fort Cumberland	634	34	28	16	546	299	2	24	16	589	448
„	St. Thomas' Street	—	—	—	—	—	—	—	—	—	—	—
„	Garrison Hospital	142	—	—	—	—	—	12	12	6	213	513
Gosport	Forton	599	14	38	30	567	502	3	20	20	1,061	956
„	Haslar	350	23	21	13	557	521	4	10		756	
„	Fort Monekton	291	31	13	6	477	454	—	—	—	—	—
Tipnor	—	74	11	12	5	351	287	—	—	—	—	—
Albany, Parkhurst	—	1,524	92	24	12	520	333	14	16	3	975	385
Marchwood	—	56	4	14		528		—	—	—	—	—
Chichester	—	650	40	14		335		4	15		751	
Winchester	—	1,751	129	14		467	344	7	20	4	591	526
Christchurch	—	174	10	42	6	532	373	2	5		707	
Brighton	Cavalry	196	10	—	—	412		6	12	2	732	
„	Infantry	228	16	—	—	347		—	—	—	—	—
Eastbourne	—	200	10	—	—	768		—	—	—	—	—
Dover	Drop Redoubt Artillery	85	4	25	9	594	428	—	—	—	—	—
„	Western Heights Infantry	657	27	25	23	437	416	12	10	6	616	461
„	Dover Castle	584	28	48	9	412	147	8	17	3	654	476
„	South Lines Casemates	136	5	32	26	458	395	—	—	—	—	—
Canterbury	Cavalry	288	30	9	9	467	467	6	6	3	618	519
„	Artillery	210	14	15	15	490	308					
„	Northgate Infantry	476	24	20	16	534	343	20	8	3	983	695
„	Permanent „	867	42	20	20	394	382					
Hythe	Infantry	245	12	20	20	434	386	4	12	6	696	587
Shorncliffe	Artillery	114	8	14	14	396	378	—	—	—	—	—
Walmer	Cavalry	80	7	20	10	1,052	428	—	—	—	—	—
„	North Infantry	410	12	36	29	492	351	5	20	20	886	632
„	South „	595	16	23	20	507	290	—	—	—	—	—
Plymouth	Citadel	1,172	112	32	3	1,536	345	2	3	2	524	
„	St. Nicholas' Island	134	16	11	8	363	350	1	9		542	
„	Maher Barracks	162	8	24	16	485	418					
„	Staddon Point	90	7	15	11	495	404	2	12		575	
„	No. 4. Redoubt	32	3	20	6	478	459					
„	No. 5. „	22	4	8	4	391	340					
Devonport	Mount Wise	266	13	25	9	584	378	—	—	—	—	—
„	George's Square	234	23	10		395		—	—	—	—	—
„	Cumberland „	182	15	11		365		—	—	—	—	—
„	Picquet	105	9	12	7	335	300	—	—	—	—	—
„	Ligonier Square	186	16	11		368		—	—	—	—	—
„	Frederick „	85	8	9		441		—	—	—	—	—
„	Granby	88	6	14	12	430	398	—	—	—	—	—
„	Stoke, General Hospital	—	—	—	—	—	—	20	21		685	
„	Ordnance Hospital	—	—	—	—	—	—	4	10		672	606
Pendennis Castle	—	130	23	48	20	329	301	2	3		616	
St. Mawes	—	20	1	20		351		—	—	—	—	—
Exeter	Cavalry	206	23	8	5	589	462	6	6	5	834	432
„	Artillery	338	28	12		427	394	6	6	4	936	650
Taunton	—	61	7	8	6	523	497	2	4	2	761	631
Dorchester	—	185	20	8		515		4	6		777	
Weymouth	—	168	10	18	15	603	494	3	8	6	628	541
Trowbridge	—	152	13	68	5	604	375	3	6	4	344	286
Bristol	—	450	28	16	12	550	450	7	12	1	1,386	662
Brecon	—	370	—	—	—	550		4	9	7	678	650
Newport	—	528	—	—	—	580		6	10	4	847	774
Pembroke	—	223	—	—	—	390		3	5	4	874	700
Woolwich	Artillery	2,423	186	22	12	583	369	66	18	5	883	243
„	Engineers	235	11	24	18	576	433					

Return showing the Amount of Accommodation in each Barrack in the United Kingdom, &c.—*continued.*

I.—England and Wales—*continued.*

Station.	Barrack.	The No. of Men each Barrack is calculated to accommodate.	No. of Men's Rooms in the Barrack.	No. of Men in a Room.		Cubic feet of space allowed for each Man.		Hospital.				
				Highest No.	Lowest No.	Max.	Min.	No. of Wards.	No. of Patients in a Ward.		Cubic feet of space for each Patient.	
									Highest No.	Lowest No.	Max.	Min.
Purfleet	Artillery	81	6	11		349		1		4	558	
Windsor	Cavalry	423	—	—	—	475		4		9	748	
„	Infantry	870	—	—	—	332		9	9	3	599	
Hounslow	Cavalry	288	—	—	—	467		4	15	6	485	410
Hampton Court	Old	73	—	—	—	468		—	—	—	—	—
„	New	54	—	—	—	508		—	—	—	—	—
Croydon	—	320	—	—	—	442		5	8	2	437	
London	Wellington	713	—	—	—	390		—	—	—	—	—
„	St. George's	663	—	—	—	390		—	—	—	—	—
„	Buckingham Palace	50	—	—	—	429		—	—	—	—	—
„	Regent's Park Cavalry	443	—	—	—	499		6		5	1,222	
„	Portman Street	472	—	—	—	331		—	—	—	—	—
„	St. John's Wood	194	—	—	—	370		—	—	—	—	—
„	Hyde Park Cavalry	419	—	—	—	572		3	12	6	1,349	1,314
„	„ Infantry	83	—	—	—	376		—	—	—	—	—
„	Kensington Cavalry	44	—	—	—	363		—	—	—	—	—
„	„ Infantry (temporary)	67	—	—	—	285		—	—	—	—	—
„	Tower Infantry	651	—	—	—	397		6		4	575	
„	„ Artillery	48	—	—	—	Not stated.		—	—	—	—	—
II.—SCOTLAND.												
Edinburgh Castle	—	860	108	—	—	590	316	6	15	4	855	637
Piershill	Cavalry	362	48	—	—	645	500	4	14	2	805	730
Leith Fort	Artillery	276	25	—	—	450	330	3	7	5	546	348
Blackness Castle	—	56	6	—	—	400	240	—	—	—	—	—
Greenlaw	—	224	16	—	—	434	374	—	—	—	—	—
Berwick	—	720	—	—	—	274		7	10	4	546	515
Holy Island Castle	—	28	4	—	—	620	290	—	—	—	—	—
Dundee	—	308	12	—	—	600	280	9	8	8	1,171	893
Perth	—	464	26	—	—	440	240	6	9	2	808	699
Glasgow	Cavalry	364	—	—	—	551		4	8	1	1,495	800
„	Infantry	822	—	—	—	405		5	16	16	602	564
Hamilton	Cavalry	175	—	—	—	471		3	9	3	690	566
Paisley	Infantry	256	17	—	—	516	482	3	9	2	974	748
Dumbarton Castle	—	60	—	—	—	433		—	—	—	—	—
Ayr	—	374	34	—	—	382	348	3	15	2	989	669
Stirling Castle	—	560	—	—	—	508		5	15	4	593	477
Fort George	—	1,154	175	—	—	530	476	6	14	9	780	727
Fort Augustus	—	230	28	—	—	459	344	2		5	511	
Fort William	—	58	11	—	—	476	311	—	—	—	—	—
Aberdeen	—	352	29	—	—	486	504	4		10	594	
III.—IRELAND.												
Dublin	Royal Barracks	1,916	—	—	—	950	353	32		8	524	
„	Portobello	731	—	—	—	440		8	11	7	550	511
„	Pigeon-house Fort	207	—	—	—	380		3		6	435	
„	Beggar's Bush	323	—	—	—	416		2	13	7	586	535
„	Richmond	1,341	—	—	—	338		8		11	518	
„	Island Bridge	440	—	—	—	329		—	—	—	—	
„	Royal Infirmary	199	—	—	—	—		15	19	8	811	
Drogheda	Mill Mount	124	—	—	—	426		1		7	504	
„	Fair Street	68	—	—	—	262		1		8	490	
Navan	—	52	—	—	—	515		—		—	—	
Trim	—	72	—	—	—	391		1		6	528	
Arklow	—	72	—	—	—	440		—		—	—	
Athy	—	48	—	—	—	373		1		6	420	
Ballinglas	—	50	—	—	—	360		—		—	—	
Maryborough	—	66	—	—	—	320		2		5	633	
Naas	—	402	—	—	—	371		3		10	503	456
Newbridge	—	856	—	—	—	371		10		10	485	
Carlow	—	132	—	—	—	354		2		6	545	
Castlecomer	—	94	—	—	—	433		2		5	603	
Duncannon Fort	—	124	—	—	—	350		2	8	4	455	264
Kilkenny	—	534	—	—	—	363		5		10	554	
New Ross	—	50	—	—	—	345		1		6	433	
Waterford	Artillery	120	—	—	—	466		2		5	526	
„	Infantry	378	—	—	—	355		4		6	642	
Wexford	—	100	—	—	—	466		2		4	427	
Athlone	Artillery	93	5	18		399		—	—	—	—	—
„	Cavalry and infantry	1,002	47	40	6	649	220	15	8	2	504	449
Ballaghadireen	—	94	6	14		337		—	—	—	—	—
Ballinrobe	Infantry	90	10	10	8	399	346	1		10	574	
„	Cavalry	114	10	66	7	873	213	2		5	551	
Banagher	—	63	7	9		334		1		5	648	

Return showing the Amount of Accommodation in each Barrack in the United Kingdom, &c.—*continued.*

III.—IRELAND—*continued.*

Station.	Barrack.	The No. of Men each Barrack is calculated to accommodate.	No. of Men's Rooms in the Barrack.	No. of Men in a Room.		Cubic feet of space allowed for each Man.		Hospital.				
				Highest No.	Lowest No.	Max.	Min.	No. of Wards	No. of Patients in a Ward.		Cubic feet of space for each Patient.	
									Highest No.	Lowest No.	Max.	Min.
Boyle	-	248	13	31	10	616	416	3		10	663	
Carriek-on-Shannon	-	126	6	24	18	340	326	2		4	565	
Castlebar	Artillery	53	5	13	10	441	337	—	—	—	—	—
„	Infantry	454	41	11		350		5	16	2	677	346
Dunmore	-	69	4	30	6	406	304	1		2	528	
Foxford	-	74	7	10		405		1		6	573	
Galway	Castle	120	12	10		325		7	8	4	493	385
„	Shamble	264	33	8		401		—	—	—	—	—
Gort	-	88	7	12		413		2		5	522	
Granard	-	40	7	10	4	437	360	—	—	—	—	
Longford	Artillery	110	4	22	9	438	352	—	—	—	—	
„	Cavalry	161	12	18	6	523	338	7	4	3	1,639	
Loughrea	-	60	4	14		375		1		4	688	
Mullingar	-	932	54	17		370		8		8	540	
Oughterard	-	142	14	10		390		—	—	—	—	—
Parson's-town	-	1,093	60	17		352		12	10	4	1,229	491
Philipstown	-	118	8	16	14	426	382	2	10	6	645	641
Portumna	-	63	5	17	9	541	227	1		4	596	
Roscommon	-	85	5	15	14	373	365	2		4	539	
Shannon Bridge	-	206	12	21	8	428	322	—	—	—	—	—
Sligo	-	72	3	28	16	351	310	2		5	1,027	
Tullamore	-	83	6	15	12	432	367	3		5	594	
Westport	-	114	14	8		467		2	4	2	617	454
Belfast	Infantry	872	—	—	—	402		9	10	5	780	622
„	Artillery	112	—	—	—	517		—	—	—	—	—
Armagh	-	142	13	16	6	700	255	13	14	2	541	365
Ballyshannon	-	58	5	16	10	576	435	—	—	—	—	—
Bellick	-	50	3	18	14	357	353	—	—	—	—	—
Belturbet	-	170	9	27	11	495	338	6		4	742	635
Carrickfergus	-	86	—	—	—	320		—	—	—	—	—
Cavan	-	112	5	23	22	538	349	6		4	594	540
Charlemont	Fort Barracks	91	10	12	7	514	438	3		6	786	643
„	Lower Square „	70	6	12	10	378	220					
Downpatriek	-	70	8	14	5	445	321	1		4	468	
Dundalk	-	404	24	16		384		6	5	4	591	
Enniskillen	Main	300	31	10		375	297	10	15	4	513	675
„	Castle	68	3	23	20	388	344					
„	Redoubt	68	4	20	14	503	459					
Lifford	-	41	2	20		294		—	—	—	—	—
Londonderry	-	285	14	20		499	457	10	8	7	851	641
Rutland	-	85	7	—	—	648	158	—	—	—	—	—
Newry	Linen Hall	698	50	14	10	280	257	6		10	488	
Omagh	-	84	6	27	6	322	314	6		4	657	639
Cork	-	1,946	139	15	9	480	400	20	13	6	640	561
„	Elizabeth Fort	200	20	11	4	841	276	—	—	—	—	—
„	Camden „	165	13	14	9	487	412	—	—	—	—	—
„	Carlisle Fort	116	7	35	9	404	336	—	—	—	—	—
„	Cove Fort Hospital	—	—	—	—	—	—	6	8	5	637	412
„	Spike Island	112	8	14		300		1		10	—	—
„	Haulbowline	98	4	21		376		—	—	—	—	—
Ballincollig	-	408	34	10		462		7	10	2	924	485
Bandon	-	120	14	12	8	450	375	1		4	720	
Buttevant	-	931	—	—	—	422		9		6	726	
Charlesfort	-	282	38	8		315		—	—	—	—	—
Clonakilty	-	84	7	10		320		—	—	—	—	—
Fermoy	Old infantry	1,230	—	—	—	394		—	—	—	—	—
„	Cavalry	96	—	—	—	520		—	—	—	—	—
„	New Barracks	495	—	—	—	394		—	—	—	—	—
„	General Hospital	—	—	—	—	—	—	12	11	10	690	661
Kinsale	-	472	59	8		450		5		5	450	403
Mallow	-	90	—	—	—	228		1		4	256	
Mill Street	-	82	—	—	—	229		—	—	—	—	—
Youghal	-	168	—	—	—	403		3	10	6	561	502
Limerick	Artillery	164	—	—	—	468		4		4	669	
„	Castle	206	—	—	—	411		4		5	557	
„	New Barracks	555	—	—	—	385		8		5	540	
„	John's Square	96	—	—	—	378		—	—	—	—	—
„	Strand	236	—	—	—	475		4		8	512	
Cahir	-	360	—	—	—	382		3	10	4	570	484
Cashel	-	128	—	—	—	365		4		7	531	
Clare Castle	-	192	—	—	—	482		4		6	475	
Clonmel	Artillery	118	—	—	—	383		6	8	6	549	526
„	Infantry	365	—	—	—	423						
Fethard	-	119	—	—	—	355		2		5	487	
Nenagh	-	171	—	—	—	498		3		7	532	511
Newcastle	-	90	—	—	—	408		1		4	325	
Templemore	-	1,119	—	—	—	430		10		8	620	568
Tralee	-	369	—	—	—	349		2		9	612	

APPENDIX XXXVI.

(Furnished by Order of the Secretary of State for War.)

A Return of the Barrack and Hospital Accommodation erected in the United Kingdom since 1st January 1847, showing the Number of Rooms in each Barrack, the Number of Men allotted to each Room and the Cubical Space afforded to each Man; also showing the Number of Wards in each Hospital, the Number of Patients allotted to each Ward, and the Cubical Space afforded to each Patient; to which is attached a Return showing the Cubical Space afforded to each Man in each of the Guard Rooms in the London District.

District.	Station.	Accommodation.							
		Barrack.				Hospital.			
		Number of Men's Rooms in each Barrack.	Number of Men allotted to each Room.	Cubical Space afforded to each Man.	Remarks.	Number of Wards in each Hospital.	Number of Patients allotted to each Ward.	Cubical Space afforded to each Patient.	Remarks.
				Feet.				Feet.	
Brighton.	Littlehampton redoubt - -	3	1	21	345				
			1	10	418				
			1	11	380				
	Shoreham redoubt -	3	1	22	481				
			1	13	436				
			1	13	436				
	Eastbourne - -	- -	- -	- -	- -	6	1	5	580
							1	5	634
							1	5	671
							1	5	634
							1	4	698
							1	7	607
Medway.	Chatham,—Brompton barracks:								
	New barracks over the North Square stables - -	30	Average 14	486					
	Quarters in rear of barracks for married non-commissioned officers and privates Royal Engineers - -	48	40	1	1,694				
			8	1					
	Additional story to the garrison hospital - -	- -	- -	- -	- -	10	10	600	
	New hospital called No. 2, attached to the garrison hospital - -	- -	- -	- -	- -	6	10	729½	
	New hospital for lunatics near the General Hospital, Fort Pitt - -	- -	- -	- -	- -	13	2 Officers'	1	2,763
							2 Men's	4	691
							2 seclusion wards.	1	933
							4 Men's	4	657
							1 „	6	700
							2 „	3	677
	Gravesend:								
	Shorne Mead battery - -	7		9	457				
	Coal House battery - -	4	3	24	306				
			1	20	367				
Western	Devonport:								
	Raglan barracks, south wing - -	42	8	21 & 1 Sergt	458				
			9	22 – 1 „	489				
			8	22 – 1 „	509				
			9	22 – 1 „	516				
			8	22 – 1 „	542				
	Artillery barracks -	6		24	604				
	Staddon point -	7	2	12	446				
			2	15	420				
			1	13	412				
			1	12	363				
			1	11	496				
			1	14	414				
			2	16	388				
			1	15	386				
	Pickiecombe point -	9	1	20	425				
			1	4	580				
			1	4	698				
			1	4	597				
			1	3	446				

A Return of the Barrack and Hospital Accommodation erected in the United Kingdom since the 1st January 1847, &c.—*continued.*

District.	Station.	Accommodation.							
		Barrack.				Hospital.			
		Number of Men's Rooms in each Barrack.	Number of Men allotted to each Room.	Cubical Space afforded to each Man.	Remarks.	Number of Wards in each Hospital.	Number of Patients allotted to each Ward.	Cubical Space afforded to each Patient.	Remarks.
Western—*cont.*	Devonport—*continued.*			Feet.				Feet.	
	Prince of Wales's redoubt	6 { 2	18	384					
		2	18	397					
		1	1	1,694					
		1	3	627					
	Hospital	- -	- -	- -	- -	- -	Nil.		
Dover.	Western Heights infantry:								
	Soldiers rooms	23 { 17	21	499					
		3	21	469					
		3	21	474					
	Staff - serjeant's quarters	12	2	1,133					
	Shorncliff artillery barracks	- -	- -	- -	- -	3 { 2	6	501	
						1	5	218	Itch ward.
Exeter.	Bristol:								
	Horfield barracks cavalry	10 { 8	12	} 532					
		2	6						
	Do. do. infantry	20	16	425					
	Do. do. do.	- -	- -	- -	- -	7 { 2	12	} 811	
						4	4		
						1	1		
Guernsey.	Mount Crevelt	1	11	442					
	Fort Le Marchant	4 { 1	20	362					
		1	18	420					
		1	14	308					
		1	10	419					
	Fort Doyle	1	14	523					
	Alderney Butts barracks	- -	- -	- -	- -	2	11	495	
Portland.	Weymouth barracks:								
	Additions to barracks	4 { 1	1 Staff Sergt.	3,540					
		1	1 Staff Sergt.						
		1	1 Staff Sergt.						
		1	1 Staff Sergt.						
	Do. do. to hospitals	- -	- -	- -	- -	3 { 2	10	680	
						1	2	750	Itch wards.
	Portland Verne barracks	12 { 4	11	} 400					
		4	8						
		1	4	700					
		3	1 Sergt. each.	1,400					
London.	Wellington barracks. B. Building	18 { 6	16	510	Ground floor				
		6	16	484	First „				
		6	16	426	Second „				
	C. Building	29 { 8	16	504	Ground „				
		1	14	500	„ „				
		8	16	484	First „				
		1	14	482	„ „				
		1	18	607	„ „				
		8	16	430	Second „				
		1	14	427	„ „				
		1	18	538	„ „				
	E. Building	6 { 1	20	526	Ground „				
		2	20	500	First „				
		2	20	440	Second „				
		1	15	470	„ „				
		32	1	2,035	N.C.offirs. rooms				
	Croydon	7	20	481		2	7	730	First-floor.
						2	5	831	„ „
						2	6	731	Second-floor.
						2	5	720	„ „
	Tower	- -	- -	- -	- -	13 { 2	3	856	Third-floor.
						1	1	1,214	„ „
						1	1	1,320	„ „
						1	2	1,330	Detached buildings (itch ward)
	Hounslow	- -	- -	- -	- -	6 { 1	10	660	First-floor.
						1	4	800	„ „
						1	1	1,555	„ „
						1	10	660	Second-floor.
						1	10	660	„ „
						1	3	720	Itch ward adjoining the building.

A Return of the Barrack and Hospital Accommodation erected in the United Kingdom since the 1st January 1847—*continued.*

District.	Station.	Accommodation.							
		Barrack.				Hospital.			
		Number of Men's Rooms in each Barracks.	Number of Men allotted to each Room.	Cubical Space afforded to each Man.	Remarks.	Number of Wards in each Hospital.	Number of Patients allotted to each Ward.	Cubical Space afforded to each Patient.	Remarks.
				Feet.				Feet.	
London.—*cont.*	Tower Waterloo barracks - -	75 { 11	18	533	Ground floor				
		2	17	492	„ „				
		12	18	518	First „				
		2	17	486	„ „				
		12	18	467	Second „				
		2	17	438	„ „				
		34	1	1,800	N.C.offirs.rooms				
Sheerness.	Soldiers New barracks:								
	Right wing -	13	13	550					
	Left wing -	43	14	511					
	Military hospital -	- -	- -	- -	- -	11 { 9	9	667	
						2	10	795	
Manchester.	Preston. Artillery - -	5 { 3	16	729					
		2	6	557					
	Preston. Cavalry - -	8 { 7	16	729	- -	2	8	750	
		1	12	638					
	Preston. Infantry - -	62 { 28	15	544					
		30	16	468	- -	10 { 4	8	774	
		2	10	590		4	9	820	
		2	5	573		2	6	782	
	Sheffield. Cavalry - -	12 { 6	21	567					
		2	12	687	- -	3 { 2	11	815	
		2	29	701		1	10	700	
		2	18	662					
	Sheffield. Infantry - -	36 { 14	16	528					
		14	15	563					
		1	13	619	- -	6 { 2	11	815	
		2	14	594		4	9	778	
		2	19	646					
		3	18	682					
	Liverpool, North battery - -	8 { 4	25	450	- -	6 { 1	9	607	
		4	25	447		2	9	565	
						3	6	547	
Portsmouth.	Portsmouth and Portsea:								
	Anglesey barracks	113 { 53	18	476					
	Do. for married soldiers - -	60	1	1,662					
	Hilsea barracks -	6	25	470					
	Cambridge barracks	26	18	520					
	Point battery - -	4	20	380					
						25 { 14	17	683	
						6	6	792	
	Garrison hospital -	- -	- -	- -	- -	2	9	699	
						1	10	677	
						2	7	726	
	Winchester barracks - -	- -	- -	- -	- -	12 { 4	13	778	
						8	10	778	
	Isle of Wight:								
	Fort Victoria -	16 { 13	11	427					
		2	16	427					
		1	5	427					
	Cliffend Fort - -	14 { 13	8	580					
		1	7	660					
	Fresh water redoubt	4 { 1	11	415					
		1	5	415					
		1	24	451					
		1	23	451					
	Shorcham battery -	3 { 1	22	450					
		2	13	450					
	Gosport:								
	Blockhouse fort -	5	18	528					
Pembroke.	Pembroke dock:								
	North East Martello tower -	2 { 1	18	280					
		1	15	270					
	South-West Martello tower -	2 { 1	{ 6	755					
		1	{ 12	377					
			{ 8	530					
			{ 12	352					

A Return of the Barrack and Hospital Accommodation erected in the United Kingdom since the 1st January 1847—*continued.*

District.	Station.	Accommodation. Barrack. Number of Men's Rooms in each Barracks.	Number of Men allotted to each Room.	Cubical Space afforded to each Man.	Remarks.	Hospital. Number of Wards in each Hospital.	Number of Patients allotted to each Ward.	Cubical Space afforded to each Patient.	Remarks.
Pembroke.—*cont.*	Pembroke dock.—*cont.*			Feet.				Feet.	
	Pater battery barracks	4	15	377					
	Defensible barracks	- -	- -	- -	- -	3 { 1	4	805	
						1	8	593	
						1	16	486	
	Milford Haven:								
	Thorn Island barracks	3 { 1	19	648					
		1	19	500					
		1	19	557					
	Stack Rock tower	1	30	332					
	Dale Point barrack	4 { 1	14	455					
		1	21	400					
		1	16	490					
		1	24	490					
Yorkshire.	Bradford	8 { 6	12	460					
		2	6	470					
Woolwich.	Royal Artillery barracks	68 { 34	20	584					
		34	20	752					
	Royal Ordnance hospital	- -	- -	- -	- -	6 { 1	12	748	
						1	14	805	
						1	12	945	
						1	14	1,010	
						1	12	977	
						1	14	1,042	
Scotland.	Hamilton	14	26	377					
	Leith Fort barracks	- -	- -	- -	- -	2	8	694	
	Paisley barracks	- -	- -	- -	- -	1	10	770	
	Ireland.								
Cork.	Cork:								
	Charles Fort	5 { 4	15	371					
	Rocky Island	1	15	303					
	Kinsale hospital	- -	- -	- -	- -	1	10	400	
	Bandon	- -	- -	- -	- -	1	4	576	
	Fermoy	- -	- -	- -	- -	7 { 4	13	550	
						2	8		
						1	4		
Curragh.	Curragh District:								
	Kilkenny	6 { 2	19	573					
	Cavalry barracks	4	29	517					
	Additions to hospital	- -	- -	- -	- -	4 { 1	12	640	
						1	4	610	
						1	12	610	
						1	4	640	
Dublin.	Dublin District:								
	Ship Street barracks	21 {	11 to 2 rooms 13 – 3 „ 14 – 4 „ 16 – 6 „ 18 – 2 „ 24 – 4 „	495					
	Beggars Bush barracks	- -	- -	- -	- -	4 {	6 to 2 wards 12 to 2 „	620	
	Ship Street barracks	-	- -	- -	- -	8 {	4 to 2 „ 5 to 2 „ 6 to 1 „ 7 to 1 „ 8 to 1 „ 9 to 1 „	754	
Limerick.	Limerick:								
	Additions to new barracks	27 { 9	1 Sergeant.	1,170					
		18	18	454					
	Do. officers' quarters	30 { 15	1 Off.	2,000					
		15	3 Servant's	666					
	Military hospital	- -	- -	- -	- -	10 { 4	17	Average	
						6	5	860	

APPENDIX XXXVII.

A RETURN showing the CUBICAL SPACE afforded to each Man in each of the Guard Rooms in the London District.

Barrack.	Number of Men on Guard.	Number of Men usually in Guard Room.	Cubical Space afforded to each Man.	Remarks.
Tower:				
Main guard	29	21	490	
Mint	20	14	419	
Entrance	11	8	306	
Wharf	4	3	845	
Drawbridge	4	3	994	
Royal artillery	7	5	569	
Wellington:				
East entrance	10	7	724	
West	10	7	724	
St. George's	19	13	447	
Buckingham guard	43	32	686	
Regents Park	19	12	298	
Portman Street	11	8	358	
St. John's Wood	20	14	232	
Hyde Park:				
Cavalry barrack	27	19	432	
Infantry	19	9	636	
Kensington:				
Cavalry barrack	5	3	627	
Infantry	31	22	270	
Croydon	4	3	1,380	
Hounslow	20	14	361	
Hampton Court	8	6	840	
Windsor:				
Cavalry barracks	13	9	700	
Infantry	14	9	300	
Do. hospital	4	3	640	

APPENDIX XXXVIII.

EXTRACT from the "ORDERS and REGULATIONS for the Guidance of the Corps of Royal Engineers and Royal Sappers and Miners at home and abroad, revised by Order of the Master-General and Board of Ordnance to 1st January 1851."

The following is to be the calculation of cubical space, viz.:—

400 to 500 cubic feet per man in barracks in temperate climates,
600 to 700 „ „ hospitals „ „
480 to 600 „ „ barracks in tropical climates
700 to 900 „ „ hospitals „ „

and in general the maximum space is to be allowed, and for single bedsteads.

APPENDIX XXXIX.

(Prepared by the Secretary.)

THE following queries were addressed to medical officers of the ten principal metropolitan hospitals, to the resident medical officers of twenty provincial hospitals and infirmaries, to the principal medical officers of five naval and marine hospitals, and to the medical officers in charge of the troops at forty-six military stations throughout the United Kingdom.

1. What is the width of the beds?
2. What is the distance between the sides of the adjoining beds?
3. What is the distance from foot to foot between the opposite beds?
4. What is the cubic space allowed for each patient in the wards?
5. Are any special means of ventilation used in the wards? If so, what are they? and what in your opinion is their practical value?

These replies have been, as far as possible, reduced to a tabular form in the following Statement:—

I.

Metropolitan Hospitals.	What is the width of the beds?	What is the distance between the sides of the adjoining beds?	What is the distance from foot to foot between the opposite beds?	What is the cubic space allowed for each patient in the wards?
	ft. in.	ft. in.	ft. in.	ft.
Westminster	3 –	Av. 1 10	10 –	1,100
St. Mary's	3 –	2 6	9 3	1,500
King's College	3 –	6 –	11 6	Max. 2,068 Min. 1,809
University College	3 –	3 6	11 3	1,100
Royal Free	4 –	6 –	9 –	Max. 2,426 Min. 1,618
London	3 –	8 –	7 –	1,700
Guy's	3 2	Max. 10 – Min. 4 –	9 –	Max. 2,000 Min. 1,300
St. Thomas's	3 –	Max. 4 6 Min. 3 –	Max. 15 – Min. 8 –	Max. 1,600 Min. 800
St. Bartholomew's	2 11	5 –	8 –	1,377
St. George's	3 –	Av. 3 –	12 –	1,260
			11 –	1,100
Middlesex	3 1	Av. 3 9	Av. 14 –	{ Med. wds. 1,159 { Gen. avg. 1,107

II.

Provincial Hospitals.	What is the width of the beds?	What is the distance between the sides of the adjoining beds?	What is the distance from foot to foot between the opposite beds?	What is the cubic space allowed for each patient in the wards?
	ft. in.	ft. in.	ft. in.	ft.
Brighton	3 –	Max. 6 – Min. 2 6	16 –	Min. 1,100
Chichester	3 –	2 5	6 –	702
Winchester	2 11	Av. 4 –	Sq. wards 12 – Lg. wards 6 –	Max. 1,200 Min. 900
Bristol	3 –	Av. 2 –	7 8	1,000
York	4 –	4 –	9 –	1,425
Nottingham	3 3	Av. 4 6	7 –	1,000
Manchester	3 –	Av. 3 –	varies.	1,200 to 1,500
Leeds	3 4	2 6	15 –	1,106 951
Sheffield	3 –	6 3	11 10	Men 1,301 Women 1,625
Birmingham	3 3	Av. 2 4	Av. 6 –	Max. 1,105 Min. 653 Av. 862
Norwich	3 3	5 –	7 6	1,292
Derby	3 4	4 – 2 –	7 – 3 –	900 600
Newcastle-upon-Tyne	2 8½	Av. 4 4	11 10	1,560
Glasgow	3 – & 2 9	Av. 3 6	12 – & 11 10	Fever wds. 1,000 others 800
Aberdeen	3 –	4 –	Min. 12 –	900
Edinburgh	Av. 3 –	between each pair. Av. 5 6	Av. 11 –	Av. 1,130

III.

Royal Naval and Royal Marine Hospitals.	What is the width of the beds?	What is the distance between the sides of the adjoining beds?	What is the distance from foot to foot between the opposite beds?	What is the cubic space allowed for each patient in the wards?
	ft. in.	ft. in.	ft. in.	feet.
Haslar	3 –	4 –	10 –	Ground and 1st. fl. 1,230 Up. fl. 1,080
Plymouth	3 –	4 –	10 9	Up. fl. 860 Low. 1,080
Cork	3 –	3 –	22 –	Av. 930
Woolwich	3 –	Avg. 3 4	9 –	Gd. fl. 843⅓ 1st. fl. 751⅔
Chatham	3 –	3 –	12 10	1,340

IV.

Military Hospitals.	What is the width of the beds.	What is the distance between the sides of the adjoining beds?	What is the distance from foot to foot between the opposite beds.	What is the cubic space allowed for each patient in the wards?
	ft. in.	ft. in.	ft. in.	ft.
Fort George	3 2	2 6	2wds. 4 – 4 do. 12 –	754
Stirling	3 –	Max. 3 11 Min. 1 10½	7 –	Max. 775 Min. 564
Glasgow	3 3	1 11	8 –	625
Edinburgh Castle	3 –	2 –	19 –	739

IV.—*cont.*

Military Hospitals.	What is the width of the beds?	What is the distance between the sides of the adjoining beds?	What is the distance from foot to foot between the opposite beds?	What is the cubic space allowed for each patient in the wards?
	ft. in.	ft. in.	ft. in.	feet.
Piershill	Av. 3 –	2 –	10 –	680
Preston	2 10	Avg. 3 –	Max 13 – Min. 7 –	Cavy. 750 Infy. 800
Manchester	3 –	2 4	9 8	1,018
Birmingham	3 1	2 1	4 7	582
Norwich	2 2	2 1	1 3	400
Woolwich Garrison.	3 6	2 6	Max 15 – Min. 4 –	Max. 1,143 Min. 466
Sheerness	3 –	3 –	Single rows	480
Chatham Garrison.	3 2	2 3	4 9	Max. 690 Min. 527
,, Fort Pitt	2 7	1 10	9 –	690
,, Roy. E. Brompton	3 –	2 –	6 –	571
Walmer	3 –	2 –	5 11	1st. fl. 843 2d. fl. 826
Dover	2 11	2 –	6 9	Max. 560 Min. 513
Brighten	3 –	1 8	6 –	633
Chichester	3 –	2 3	9 –	756
Winchester	3 –	2 –	8 –	Max. 800 Min. 750
Portsmouth	3 –	2 –	8 –	700
Parkhurst	3 –	2 –	8 9	775
Plymouth	3 –	2 8	8 9	685
Pembroke	3 –	2 8	6 8	538
Hounslow	3 –	2 6	6 6	600
Canterbury	3 –	2 7	6wds 15 – 2wds 10 –	684
Nottingham	3 –	2 –	N° 1 6 9 N°2 16 –	No. 1. 770 No. 2. 620
Athlone	3 –	2 –	6 7	470
Birr	2 10	1 10	5 6	Ground and 1st. fl. 534 Upper 487
Cork	3 –	Max. 3 5 Min. 2 –	24 – 9 3	Max. 680 Min. 560
Dundalk	3 –	Max. 6 – Min. 4 –	7 –	Med. 680 Surg. 540
Limerik	3 –	2 –	Max. 9 6 Min. 6 5	Max. 791 Min. 771
Templemore	3 1	2 6	5 7	693
Belfast	3 –	2 6	7 8	720
Newbridge	3 6	Avg. 1 6	5 –	400
Kilkenny	3 –	1 4	5 6	441
Fermoy	2 11	2 2	L. w. 9 – Sm. 4 6	Avg. 600
Cahir	3 –	3 –	5 4	565
DUBLIN.				
General Hospital, Phœnix Park	3 2	1 9	8 8	Max. 926 Min. 878
Arbour Hill	3 3	1 5	3 5	491
Ship Street	3 –	2 3	9 6	897
Beggar's Bush	3 –	1 10	7 6	613
Richmond	3 –	1 9	3 5	2 wds. 450 2 wds. 409
Pigeon House Ft.	3 –	5 –	5 –	665
Portobello	3 –	2 –	2wds. 7 – 2wds. 5 –	2 wds. 672 2 wds. 651

5. Are any special means of ventilation used in the wards? If so, what are they, and what in your opinion is their practical value?

I. Metropolitan Hospitals.

Westminster.—The special means of ventilation at this hospital are, in my opinion, of the greatest practical value and efficiency. In the ceiling of each ward are two ornamental circular openings, leading to two air shafts, placed on each side of the smoke flue or chimney. The skirting board of the ward, a few inches above the floor, communicates by several openings with the external air; by means of slides these openings can be closed or otherwise, at pleasure; by this arrangement a constant upward current without draught is established. The air of the wards is thus always pure, and night and day equally sweet and free from all smell and closeness. As a further means of securing a constant upward current through every part of the hospital, at each wing of the building are two well staircases, at the base of which the air enters a perforated opening and passes over some hundred feet of hot water pipe; and as all the air entering the basement must pass over the coils, a steady upward current is secured, which ventilates the corridors and passages leading to the wards. I have no hesitation in expressing my opinion that there is not a building in the country so perfectly ventilated as the Westminster hospital.

(Signed) W. R. Basham,
Senior physician to the Westminster hospital.

St. Mary's.—The hospital is ventilated by means of a fresh air and a foul air shaft. The fresh air is passed into the wards through channels or flues built in the walls, which flues are supplied with fresh air entering the fresh air shaft, at the basement of the building. The foul air is extracted, or passed off from the wards, through a shaft in the ceiling of each ward, which empties itself into the foul air shaft, and is then extracted by means of suction power created by a furnace and shaft, the latter rising about 25 feet above the height of the building. This plan of ventilation is found to answer exceedingly well, and if properly carried out is of great practical value.

(Signed) Edmd. Thos. Tillard,
Steward.

King's College.—No special means. There are opposite windows in the breadth and in the length of the wards. On the subject of ventilation it may be well to state, that the medical officers of King's College Hospital were from the first, to a man, opposed to artificial ventilation; they recommended ventilation only by open windows and fireplace. As the walls of the hospital are of some thickness, and the windows of the wards are glazed with plate glass, an open fireplace of moderate size suffices to warm a ward of the following dimensions:—70 × 24 × 16, or 70 × 24 × 15, or 70 × 24 × 14. All the windows are mad to open, and ventilation can be effected either across the ward, or from end to end.

(Signed) William A. Guy, M.B.

University College.—Ordinary windows on both sides, within six inches of the ceiling, and opposite to each other. A shaft by the side of the ward flues, with an opening near the ceiling. Cold air is introduced through perforated zinc in the skirting boards.

E. A. Parkes,
Physician to the hospital.

Royal Free.—About sixteen windows; each opening to allow a current of entry below, of exit above, by graduated adjustment. Two open fires and two doors aid these.

(Signed) William Brinton, M.D.

London.—There are ventilators in the ceilings, many windows, and good fireplaces; by these simple means the wards are kept pure and sweet at all hours of the day and night.

(Signed) Robt. Hill,
House Governor.

Guy's.—There are two methods of ventilation employed, pertaining respectively to the old and new departments of the hospital. That in use in the old hospital may be termed the natural method, and consists simply in the free admission of air by doors and windows, facilitated to a certain extent by the peculiar construction of the windows, the upper sashes of which move on a central pivot, and are made to open outwards and inwards. In addition to this, two of the upper frames in the upper sash of each window are partially detached from the ordinary framework of the window, and are constructed so as to form a kind of hopper-mouthed ventilator, through which a constant and almost imperceptible current of air is transmitted to the wards. These ventilators are closed in the winter, and kept open during the summer months. In many of the wards there are also circular openings in the ceilings, placed immediately over the gaslights, which communicate with the external air by means of open channels between the joists. These are also closed in winter and opened in summer.

The other method, namely, that in operation in the new hospital, is of a more complicated character, the construction of the building having been made subservient, to a certain extent, to meet its requirements. It consists in the admission of a descending current of fresh air, by means of a single shaft or tower, communicating with an extensive chamber in the basement of the building, into which the external air enters freely, and during the winter season gets heated by passing over a series of hot-water pipes. From this chamber it is carried by numerous flues into the various wards and apartments of the hospital. The foul air is withdrawn through numerous gratings in the walls into a taller shaft, which also answers the purpose of the main chimney, the smoke flues of the building being connected with it. To produce a good ascending current of air, and a consequent sufficient amount of suction power, a fire is kept constantly burning in the basement of the high shaft, which serves the double purpose of rarefying the air and of heating water for the supply of the hospital. By these means, combined with the ordinary ward fires, an equable temperature may be sustained night and day during the winter season, and a constant change in the ward atmosphere is obtainable without recourse being had to open windows. It is, however, often necessary, especially in warm weather, to open the ward windows, to obtain a more abundant supply of fresh air. The wards thus ventilated contain each four rows of beds, within two outside walls, divided in the centre by an intervening wall, in which extensive openings are made to admit of free communication from one side to the other.

On the whole I am inclined to think, after considerable experience of both systems, that for general hospital purposes the method first mentioned is the best, provided there are a sufficient number of fireplaces and an ample allowance of space is reserved for each patient, but it is a question whether the second method would not prove equally if not more efficacious in a building constructed to admit of not more than two rows of beds within two outside walls, and wherein the windows could be opened freely during the summer months.

John Chas. Steele, M.D.,
Superintendent.

St. Thomas'.—Open windows and fires. In the ceilings are openings with flues running up to the top of the building to let out the foul air at night; all other methods of ventilation are of no practical use. I have spent much time on the continent visiting the hospitals, and have carefully inspected the modern artificial methods adopted, particularly at the new

hospital in Paris, La Riboisière; and I have come to the conclusion, that there is very little *practical* benefit derived, quite inadequate to the enormous expenditure. Windows to pull down from the top, with a little protection in front, to prevent the downward current on the patients' heads, the windows so arranged that no bed stands under them, good open fireplaces, with perhaps for night, as we have, openings in the ceiling, with a shaft from them running up to the top of the building by the side of the chimney flue, and either by gratings over the doors, or some other more appropriate apertures, to admit fresh air from the staircase, &c., so as not only to facilitate the escape, but to force out the foul air, are much the best means of ventilation.

(Signed) R. G. Whitfield,
Resident Medical Officer.

St. Bartholomew's.—There are no special means of ventilation. The windows are numerous and large, and there is a spacious fireplace and wide chimney.

(Signed) W. Baly, M.D.

St. George's.—In a few of the wards the foul air passes out by openings near the roof, into a descending flue leading to a furnace in the kitchen. In some of the others, valves open from the wards into ascending shafts, leading into the roof; pure air being admitted by a shaft from the roof, which is first brought down to the basement of the hospital. In others the ventilation is by Arnott's valves in the chimney flues. All these plans are of service in cold weather, when the windows cannot be opened; perhaps the method with the ascending shafts into the roof is the most effectual.

(Signed) Thomas Holmes,
Assistant Secretary.

Middlesex.—The form in which the hospital is constructed has much to do with its ventilation. It consists of two parallel wings, connected by a curtain running crosswise near their centres, in the form of a letter H. The wards are almost wholly situated in the former, the corridors and passages chiefly, and the officers' rooms wholly, in the latter, which has a garden on its N.W., and a large court on its S.E. aspect. The spaces external to the wards bear a large proportion to the wards themselves, and communicate freely with the open air. The passages between the wards have large openings in their inner walls, each opening being over against a window—an arrangement which effectually prevents the accumulation of foul air outside the wards, or the transmission of foul air from one ward to another.

For the ventilation of the wards themselves, both *natural* and *artificial* means are employed.

Besides *end* windows, of which almost all the wards have one or more, each ward is furnished with from *three* to *six* opposite windows. Each window consists of three separate sashes, each of which moves on two lateral pivots at its *lower* angle. They are connected, and open diagonally inwards, by means of a vertical iron rod attached at their upper borders, and furnished at bottom with a horizontal handle. This handle revolves on a semicircular iron plate, so graduated that the sashes can be fixed at various angles, and kept open from 2 to 8 inches apart. The result of this arrangement is most important; for, whilst air can be admitted to any amount, the current passes upward, and there is no down draught. The flame of a candle held at the level of the first opening is not turned, while immediately above there is a powerful current. The walls, being coated with Parian cement on their inner surface, are non-absorbing, and are furnished, at the ceiling level and at given distances, with openings to the external air, fitted with perforated zinc plates, which can be opened or closed at pleasure.

In all the back wards of the east wing, a subsidiary *artificial* ventilation is carried on by means of a flue from the furnace of a steam-boiler of seven horse power, and the furnace of the laundry drying closet, conjointly uniting in the basement, and running up the whole height of the wing. Outside the flue there is a chamber, the air of which is, of course, always heated or rarefied. By means of an opening into this chamber, at the distance of half a foot from the ceiling of each ward, a suction-power is maintained towards the heated flue, which, it is computed, extracts ten thousand feet of impure air per minute from each of the four wards. The same plan is carried out in the west wing by means of a coke furnace.

It is important, however, to notice, that there is no perceptible difference in the purity of the air, and the salubrity of the wards thus ventilated, and of those where no such artificial means are employed.

(Signed) Alex. Shedden,
Secretary.

II. Provincial Hospitals.

Brighton.—A large shaft 60 to 70 feet in the rear of the hospital, carried underground to the basement, there communicates with pipes which carry fresh air to every ward, opening by gratings, which can be closed, just inside the doors. There are also gratings fixed in the wall below each window, which likewise open into the interior of the wards by a ventilator, which can be opened or closed at pleasure. And there are again ventilators at the top of the wall close to the ceiling, made to open or close according to the temperature required. These are found to answer very well.

(Signed) Fred. Towers,
House Surgeon.

Chichester.—Perforated zinc plates in the ceiling, opened and closed at pleasure; also in upper part of door, covered in front by an oblique panel of wood, open at top. These answer very well.

(Signed) Edward H. May,
House Surgeon.

Winchester.—None. Our long narrow wards with windows on opposite sides, are found to be ventilated better than our square ones, with windows on two adjoining sides.

(Signed) E. A. Jacob.

Bristol.—No special means for ventilation, except in one or two wards where a shaft is carried up into the roof of the house. The wards are furnished with windows which open into corridors running the whole length of the house. These corridors have free communication with the external air, both centrally and laterally. A thorough free circulation is thus sustained through them, and the ward windows are able to be open into these corridors night and day, in addition to the windows communicating directly with the external air, which are opened according to the direction of the wind, &c. By these means a very satisfactory state of ventilation is kept up.

(Signed) Nathaniel Crisp,
House Surgeon.

York.—Yes, Dr. Arnott's hydraulic machine. Value very considerable, especially in combination with *ordinary* means of ventilation.

(Signed) A. J. Hanbury,
House Surgeon.

Nottingham.—There is an opening in the centre of each ceiling, communicating with an air flue formed between the ceiling and floor above, and which flue terminates in a furnace, the fire in which is supplied with no air except that which is drawn through the

ceilings. The furnace is thus constantly drawing over the impure air from the upper part of the wards and seems to answer its purpose. There is no special provision for the entrance of air into the wards, except doors and windows.

(Signed) Joseph White.

Manchester.—A plan adopted by the committee which answers very well. The windows are made to open at the top; the space between the window and the ceiling is boxed off to within an inch or two inches of the latter. Then there are two or more openings, about 30 inches diameter, made in the middle of the room, communicating by a shaft with the roof, and at the bottom of the shaft is a common tin fan, worked by the current of foul air constantly passing through; the greater the draught of air the greater the velocity of the fan; thus it can always be discovered whether change of air is going on.

(Signed) J. Woodward.

Leeds.—Large open fireplaces, air grates, and circular doors in partition walls.

Sheffield.—Doors, fire-place, windows, and a flue in the centre of the ceiling are the only means of ventilation.

(Signed) John Hall,
H.S.

Birmingham.—There is a shaft connected with a stove, and an opening from this shaft is made into each ward; the fire being lighted underneath the shaft, the heated air draws a certain portion of foul air up with it to the upper opening in the roof. But I do not think the arrangement satisfactory.

(Signed) W. Hamilton Roe.

Derby.—Openings at the top of the wards communicating with air flues, which terminate in a cupola at the top of the building. Perforated zinc at the upper row of panes of each window. Ventilation good.

(Signed) A. H. Dolman.

Norwich.—No.

(Signed) John Skaife,
House Surgeon.

Newcastle-upon-Tyne.—In each of the three flats of the new addition there are two large wards, 111′ 0″ long, 24′ 0″ wide, averaging 14′ 6″ in height, communicating with each other by arched openings at each end, and having four semi-circular openings near the ceilings in the walls between the two wards. The two wards are heated by four open fire-places, placed back to back, with an iron box between them, and there are vents from the boxes to the wards below, for the purpose of extracting the impure air, regulated by ventilators, and vents carried up from the boxes to the apex of the roof, thereby producing most powerful exhausters. The atmosphere is admitted in fine weather by the windows, they having three heights of sashes hung on pivots; and in stormy weather the air is conveyed from the exterior to the table legs, which are made of perforated cast-iron. The above plan of ventilation is most perfect, and has given the greatest satisfaction.

(Signed) Andrew Bolton,
House Surgeon.

Glasgow.—By a contrivance at the top of the window by which the current is directed to the ceiling; by perforated glass; by openings in floor and ceiling; by ventilating shaft. The mode of ventilating patented by McKinnell is the best, most of the other plans are mere makeshifts.

(Signed) James Mc Ghee, M.D.

Aberdeen.—Many of the wards have windows on both sides. Openings of considerable size are placed near the ceilings of the wards into the common passages, and from these communications are made into pretty wide funnels, which ascend through the roof of the building.

(Signed) Robert Rattray, M.D.,
Superintendent, Aberdeen Infirmary.

Edinburgh.—By flues for admission and exit of air. In one part (the new surgical house) by Haden's apparatus.

(Signed) Alexander Mc Dougall,
Treasurer Superintendent.

III. Royal Naval and Royal Marine Hospitals.

Haslar.—Four ventilators near the ceiling leading to the external air, two opening into chimney, one of them receiving the products of a gas burner. Two ventilating panes for admission of air in each ward.

(Signed) Alex. Nisbet, I. H.

I would add on the subject of ventilation that each ward has windows on each side; the defect in the building of Haslar hospital is, the wards on the upper floor not being equal in height to the lower and first.

(Signed) J. C. Dacres,
Captain-Superintendant.

Plymouth.—Each ward has a glass louvre in place of a pane of glass in one of the sashes, of no value as a means of ventilation.

(Signed) E. Hilditch,
Inspector of Hospitals.

Cork.—No special means of ventilation.

(Signed) J. L. Trousdel, M.D.,
Assistant-Surgeon, in absence of Surgeon.

Woolwich.—Two ventilating panes in each ward. Four ventilating windows, three feet square, hung on central pivots, and opening into the main corridor. Quite sufficient during the day when all the doors are open, but insufficient at night, during the summer especially.

(Signed) Oliver Evans, M.D.
Deputy-Inspector of Hospitals.

Chatham.—Four ventilators in the ceiling of each ward, which communicate with the exterior of the wall, through the joists of the floor above. This plan answers very well, but will be further improved by valves placed so as to prevent the ingress of the external air in boisterous weather.

(Signed) John Drummond,
Deputy-Inspector of Hospitals.

IV. Military Hospitals.

Fort-George.—A perforated metallic plate is placed in lieu of a pane of glass in several of the windows of the hospital. The amount of ventilation by this means does not admit of regulation.

(Signed) G. C. Meikleham,
2nd Class Staff-Surgeon.

Stirling.—None. The best that I know for the purpose are the windows in the Middlesex hospital, London.

(Signed) G. K. Hardie, M.D.,
Staff Assistant-Surgeon.

Glasgow.—Six ventilators in the ceiling of each ward.

(Signed) E. W. Mandeville,
Surgeon, Depôt Battalion.

Edinburgh Castle.—Ventilators in ceilings of wards connected by means of a box-shaft with the external part of the building. Not good.

(Signed) John G. Wood, M.D.
Staff-Surgeon, 1st class.

Piershill.—Ventilators are placed under the floor and along the upper part of the wall between the windows, eight in each ward. Imperfect.

(Signed) W. Cattell,
Assistant-Surgeon, 5th Dr.-Gds.

Preston.—In addition to the door and two or four windows and chimney in each ward, there are two iron ventilators in the ceiling of each ward, which, when opened, allow the foul and heated air to escape externally. The air in this hospital is always pure, and I believe that the ventilators are useful.

(Signed) G. F. Bone, M.D.,
Staff Surgeon, and Surgeon Depôt Batt.

Manchester.—None; the ventilation being from the windows.

(Signed) G. Dolmage,
Surgeon 7th Dragoon Guards.

Birmingham.—In one ward there are three, in each of the other wards there are two ventilators about 9 inches from the ceiling, communicating in a slanting direction downwards directly with the open air, with one exeeption—size, $10\frac{1}{2} \times 5\frac{1}{2}$ inches, and furnished with a spring trap-door, which can be opened or closed at will. These are found of considerable practical value.

(Signed) H. Fraser, M.D.
Surgeon, 10th Hussars.

Norwich.—No special means of ventilation are used, though greatly required. Much improvement is needed in this respect.

(Signed) Thos. W. Crosse, Surgeon,
Medical Officer in charge.

Woolwich.—Ventilation is caused by means of large moveable fan lights over the door of each ward, which is opposite to the window, for the escape of foul air, while at the bottom of the door is a slit for the admission of fresh air, which with the addition of the open fireplace in each room, and the common small circular moveableventilators placed in the walls, are in my opinion very beneficial in ridding the wards of foul air and supplying them with fresh.

(Signed) John W. Halahan,
Deputy Inspector-General,
Principal Medical Officer.

Sheerness.—The wards now occupied temporarily by the sick are a certain number of rooms of the old barrack, in which there is no special means of ventilation in use.

(Signed) Stanhope H. Fasson, M.D.
Surgeon, Royal Artillery.

Chatham Garrison.—In the large wards there are two openings communicating with the open air, and two with the corridors, each 9 inches square, placed near the ceiling. In the smaller wards there are two openings only 9 inches square, one near the ceiling, and the other near the foot of the chimney. In No. 2 hospital the ventilation is from four circular openings in the ceiling, and a thorough draught of air between the floor of each room and the ceiling of the room below it. I consider the ventilation of many of the wards of No. 1 hospital imperfect as there are no special means of admitting air; and the whole of the wards of No. 2 hospital have too great an ingress of air without the means of being moderated at the discretion of the medical officer.

(Signed) A. Maclean,
Surgeon, Provisional Battalion.

Chatham, Fort Pitt.—The ceilings of the large wards present four rows of circular perforated pieces of wood, which correspond with an equal number of square metal perforated plates inserted in the outer ward. Viewed as a special means of ventilation, the arrangement is primitive, and very ineffective.

(Signed) J. R. Taylor,
Deputy-Inspector-General.

Chatham, Brompton.—No special means of ventilation.

(Signed) Henry Briscoe, M.D.
Surgeon, Royal Artillery.

Walmer.—No special means of ventilation. There are several large windows in each ward.

(Signed) Alexander Gibb, M.D.
Surgeon, Depôt Battalion.

Dover.—Perforated plates in the ceiling, communicating by a flue with the open air through another perforated plate. I consider them very efficacious.

(Signed) J. Sheldon Furlong,
Surgeon, 42d Royal Highlanders.

Brighton.—There are three circular plates, two feet in diameter, in the ceiling of the two lower wards, and perforated by 20 small holes. In the upper wards there are two plates of the above size, and two smaller ones. For the purposes of ventilation they are next to useless.

(Signed) H. Kendall, M.D.
Surgeon, 4th Lt. Dragoons.

Chichester.—No special means, unless some perforations in the ceiling constructed for the escape of smoke, &c., from lamps when used, may be so considered.

(Signed) E. B. Tuson,
2d Staff Surgeon.

Winchester.—1st. Moore's patent ventilator in every window. 2d. Gratings near the floor under every window. 3d. Two ventilators near the ceiling in every ward, communicating with distant flues in chimney stack. 4th. Moveable fanlight over each ward door.

(Signed) W. Barrett, M.B.,
Staff Surgeon, 2d class.

Portsmouth.—Tubular ventilation regulated by valvular gratings. They act efficiently when properly attended to.

(Signed) Wm. Bell, M.A.
Deputy-Inspector-General
of hospitals.

Parkhurst.—Two small openings nearly on a level with the floor at each end of the apartment, with a sliding shutter, so as to open and close at pleasure; and in the ceilings there are small openings fitted in like manner with sliding shutters and communicating with tubes which pass into the roof of the building. Practical value very good.

(Signed) I. T. O. Johnston, M.D.
Surgeon, Depôt Batt.

Plymouth.—There are no special means in use. Our ventilation is very good; there are eight large windows in each ward, all opening into the outer air, a very large fire-place, and two doors opening into the stairs passage.

(Signed) C. C. I. Delmege, M.D.
Staff-Surgeon.

Pembroke.—No. (Signed) William F. T. Ivey.

Hounslow.—Yes. Sliding ventilators from without, admitting fresh air, and circular ventilators in each ceiling, to carry off the impure air—which answers well.

(Signed) J. B. St. C. Crosse,
Surgeon, 11th Hussars.

Canterbury.—The wards are ventilated through apertures in the ceiling, opening into large horizontal shafts which communicate with the external air through the sides of the building. They appear to answer very well. The upper portion of the windows likewise moves inwards on the segment of a circle, which is a valuable addition in the ventilation of the wards in hot weather.

(Signed) H. H. Massy, M.D.
Surgeon, 2d Dragoon Guards.

Nottingham.—The wards are ventilated by the windows and openings in the ceiling capable of being closed by slides, and which communicate through the space below the roof with the passage; they answer well when the window in the passage is open.

(Signed) Nathanael P. Betts,
Assistant-Surgeon R.A.

Athlone.—None.

(Signed) S. M'V. Lloyd, M.D.
Staff-Surgeon, 2nd class, Depôt Battalion.

Birr.—None except the ordinary means by windows and chimney flues.

(Signed) R. R. Dowse.
Staff-Surgeon, 2nd class.

Cork.—Nothing special.

(Signed) J. Jackson,
Staff-Surgeon, 2nd class.

Dundalk.—No special means of ventilation; the wards have never been full since the arrival of the regiment in the barrack, May 1856.

(Signed) A. P. Lockwood,
Surgeon, 8th Hussars.

Limeriek.—The large wards are sufficiently ventilated by the several windows; small wards, a small window above the entrance, which answers for the use intended.

(Signed) J. Mostyn,
2d Staff Surgeon.

Templemore.—There are no special means used in the wards of the hospital, but the ordinary ventilation is good.

(Signed) M. F. Manifold,
Staff Surgeon, 2d Class.

Belfast.—There is a perforated iron plate one foot square in the centre of each ceiling, and iron gratings communicating with the external air between the floorings and ceilings. Without a forcing pump or draught pipe to cause a current, the ventilation cannot be perfect. The close smell still perceptible in the wards at night indicates imperfect ventilation.

(Signed) Edward W. Bawtree, M.D.
Staff Surgeon, 2d Class.

Newbridge.—None but a sort of overlapping pane in most of the windows, admitting a slight draught of air. Undoubtedly of very little benefit, but better than nothing.

(Signed) W. Ord Mackenzie, M.D.
Surgeon, 3rd Light Dragoons.

Kilkenny.—No special means except by opening the windows.

(Signed) Wm. Ker Park,
Surgeon, 16th Lancers.

Fermoy.—Iron gratings in external walls, opening beneath flooring in lower ward. In upper wards, perforated iron plates over doors.

(Signed) W. M. Dowding,
Staff Surgeon, 2nd Class.

Cahir.—There are no special means of ventilation in the wards. The only ventilation being through the upper part of the windows.

(Signed) A. Knox Rickards,
Assistant-Surgeon, 16th Lancers.

Dublin General Hospital, Phœnix Park.—The only ventilators are in the fever wards, three in the roof of each; they are beneficial as purifying the air in the wards.

(Signed) F. R. Waring,
Staff Surgeon, 2nd Class.

Dublin, Arbor Hill.—One perforated glass ventilator, and one valvular iron ventilator in each ward; I consider them of considerable value.

(Signed) A. Forteath, M.D.,
Surgeon, Royal Dragoons.

Dublin, Ship Street.—The special means of ventilation are an opening over door, which may be closed at pleasure by a glass window hung on a pivot, an opening about 18 inches by 6, near ceiling, and communicating with chimney. These means of ventilation, I think, are of great value in the winter season.

(Signed) J. Crerar,
Surgeon, 50th Regiment.

Dublin, Beggar's Bush.—None.

(Signed) J. Ewing,
Surgeon, 95th Regiment.

Dublin, Richmond Barracks.—In the two smaller wards perforated panes in the windows, and valvular openings into the chimney. In the small wards the ventilation is bad.

(Signed) Thomas Geo. Murphy,
Assistant-Surgeon in charge, 60th Rifles,
3rd Battalion.

Dublin, Pigeon House Fort.—No special means of ventilation.

(Signed) A. Hawkins,
Assistant-Surgeon, Ordnance.

Dublin, Portobello.—By means of windows, which have perforated panes of glass, and also by the patent ventilators opening into the chimney. Neither the perforated panes nor the ventilators are, in my opinion, equal to a small portion of the windows being left open.

(Signed) J. W. C. Atkins Davis,
Senior Surgeon, Royal Artillery.

No replies were received from The Royal Infirmary, Liverpool; The Northern Hospital, Liverpool; The County Hospital, Canterbury; The Devon and Exeter Hospital, Exeter.

APPENDIX XL.

EXTRACTS from the REPORT of the DEPUTATION of the BUILDING COMMITTEE of the NEWCASTLE-UPON-TYNE INFIRMARY, being the Result of their Inspection of several of the London and Provincial Hospitals.

* * * * *

Subjects treated of in this report.

We think it preferable that our report should be principally confined to those important subjects which pertain more particularly to the *construction, general arrangement*, methods of *ventilation. heating* and *cleansing* of the interior of the hospitals we visited.

* * * * *

Observations arranged under distinct heads.

We found that all the hospitals we inspected have been enlarged, or remodelled within the last few years, and that they consequently abound in the latest improvements. As every large hospital can be naturally divided into distinct departments, we have classified our observations, and arranged them under distinct heads, for the purpose of simplifying the report.

Position and *form* of hospitals.

With regard to the *position* and *form* of hospitals, we have, upon the whole, seen none situated in a more open and healthy position than our own. The general form is that of a quadrangle, with one side wanting ; the wings extend backwards from the extremities of the front, and enclose a court yard, thus ⊔ as in the Manchester Hospital, the Queen's and General Hospitals, Birmingham, and London Hospital. This court-yard is sometimes laid out as a garden, after the manner of London Hospital and Middlesex Hospital. Another common form is a central building, having wings extending across each end, giving it the general form of the letter H, as in the Southern District Hospital, Liverpool, St. George's Hospital, and Middlesex Hospital.

Porters' lodges and *entrances* of hospitals.

Several hospitals have a *porter's lodge* at the outer gate of the hospital grounds. As a rule, there is always one *principal* or *general entrance* into the building, *another* for the use of *out-door patients*, and generally *one more* at the back of the institution, which communicates with the kitchens and cellars. The last is principally used for the admission of food, fuel, and stores. All hospitals have a *porter's room* at the general entrance, with a resident porter constantly on the spot. Several have another porter stationed at the out-door patients' entrance, and also sometimes at that leading to the kitchens and store rooms.

Accident reception room.

All the hospitals we visited have a suitable *room* for the *reception* of *accidents*. It is furnished with the necessary accommodations and appliances for such cases, and is generally situated immediately adjoining to the general entrance. It is under the control of the porter who is located there, and from its position, at the entrance of the hospital, it is easy of access, and is at the same time neither a source of annoyance nor alarm to the inmates lodged in the interior of the building. The situation and internal arrangements of the accident rooms in the Manchester Hospital and the London Hospital are very admirable.

Official rooms and apartments.

The *official room* and *apartments* are all usually placed near to the general entrance. They comprise the *board room, secretaries* or *visitors' waiting room, library, museum, chapel, out-door* and *house pupils', house surgeons', and matrons' rooms.* They are generally very commodious, and the internal arrangements very complete. It is an advantage when the matron's room is near to the kitchens and store rooms, and her dormitory in connexion with those of the domestic servants. A similar connexion between the house surgeons' and house pupils' rooms is desirable ; and the sleeping apartments of the officers always adjoin those used as their sitting rooms.

Out-door patients' department.

The *out-door patients' department*, consisting of the *waiting* and *medical* and *surgical examination rooms*, together with the *dispensary, laboratory*, and convenient *store rooms* in connexion with them, are all isolated as much as possible from the wards and the interior of the building. This is necessary for the maintenance of order and cleanliness within the hospital. There is accordingly a *special entrance* for the out-patients, which prevents them from passing into the interior of the building, with *baths* and other conveniences for their special use. A small *private examination room* is attached to the physicians' and surgeons' rooms, and is so necessary as to be considered indispensable. The *waiting rooms* are always commodious, and the arrangement, ventilation, and heating of those in the Manchester Hospital and London Hospital, where the out-patients' department is on a very extensive scale, are very superior. The *dispensary* is in connexion with the waiting rooms, and the window from which medicine is distributed, is generally protected by a *partition.* This isolates patients receiving medicine, and enables the dispenser to give private directions to each one, without the other patients overhearing anything that might be offensive. This is very worthy of imitation. The internal arrangements of the dispensary are capable of being made so neat, compact, and convenient, as greatly to facilitate the dispensing operations. The *laboratory* for the compounding and preparation of crude drugs, together with the surrounding *store rooms*, are generally very commodious, with superior internal arrangements. In the Manchester Hospital the steam from the boiler is most advantageously employed for making the infusions and decoctions, and for many other purposes. The basement story of one of the wings of the London Hospital, St. Thomas's Hospital, and St. George's Hospital is appropriated for the use of the out-door patients, and appeared to us very convenient and well adapted for this department. This arrangement also completely shuts the out-patients from the interior of the hospital, and localises, at a distance from the in-door patients, the noise and dirt arising from this source.

Baths, Medic and sur cal exa nation rooms. Waiting rooms. Dispen-sary. Labora-tory. Store rooms. Situatio

In the general arrangement of the *stairs, corridors, wards, nurses' rooms, sculleries, baths, water-closets*, and *operation rooms*, there is great variety. In the older hospitals the arrangement is like to that of the Newcastle Infirmary. The stairs lead to long corridors, from which separate doors open into the wards (which are generally small), as well as into the nurses' room, sculleries, &c. Each one has, accordingly, no connexion with the other, as may be seen in the construction of our own infirmary.

General ranger of the *sta corridor wards, nurses' rooms, sculleries baths, wa closets, a operation room.* Old arra ment.

* * * * *

Of late, however, a much more healthy, compact, and convenient arrangement has been introduced into hospitals. The wards are large, and are entered by a door close to the stairs, there being no great length of corridor. Each ward has one or two nurses' rooms, with a bath, water closet, and scullery, situated either in the interior of the ward, or overlooking, and opening into it by one of its doors. This modern and superior arrangement of the wards and the other necessary rooms, [has been adopted in the beautiful new wing of St. Thomas's Hospital, London.]

Modern arrange-ment.

* * * * *

The wing of our infirmary is cut up into many small and confined rooms, whilst the modern hospital is constructed on a totally different principle. In the latter, the nurses' and other rooms are seen to be appendages to the large ward, which extends from end to end of the wing, and is capable of being ventilated by currents of fresh air from all points. In addition to this advantage, the comfort of the patients is materially increased, and the labour of the officers and nurses considerably diminished, by the wards and other necessary rooms communicating with each other, and being so conveniently placed as to be reached with ease.

* * * * *

Wards.

In several hospitals each wing is occupied by one ward and contains all the secondary rooms for nurses, baths, &c., as is seen in the Southern District Hospital,

Liverpool, the General District Hospital, Liverpool, the Queen's Hospital, Birmingham, the General Hospital, Birmingham, St. Thomas's Hospital, St. George's Hospital, and the Brussels Hospital. This is a very admirable and healthy arrangement, and is found to be compact and convenient in the working. When the wing is very broad, the ward is subdivided by a wall from end to end, which virtually separates it into two. Each one, however, communicating freely with the other, by means of open arches in the partition wall, as seen in the London Hospital. This last arrangement is very excellent, being undoubtedly the most compact and economical of all, whilst at the same time it allows of the most perfect ventilation. Wards containing twenty or more beds, with a small ward attached for operations, or other very distressing cases, are undoubtedly the most preferable. Those wards in which the windows are at such a distance from each other as to allow of two beds being placed betwixt adjoining windows, appeared to us as most compact, and to admit of the best internal arrangement. As it is of the greatest importance that hospital wards should enjoy as much light as possible, we found this, as well as efficient ventilation, best secured by having the windows to extend from the ceiling to within three feet of the floor. The number of cubic feet of air allowed to each bed varied from about 900 to 1,800. There can be no doubt that it is most desirable to allow as large an amount of space to each bed as possible ; and we are of opinion that a lofty ward is much more healthy than a ward containing the same number of beds, and cubic feet of air, which is wider but less lofty. Many great improvements have of late been introduced into the interior of the wards. Amongst them we would advert to the use of *Parian cement* in Middlesex Hospital, as a coating for the walls. It conduces to the salubrity of an hospital, by allowing the frequent washing of the walls without injury, whilst, at the same time, it avoids the great expense and unavoidable annoyance of frequent whitewashing, or painting. The *floors* are always of wood, the surface whereof is capable of receiving a polish, and of resisting the water used in washing. This is most desirable in a sanitary point of view, and in St. Thomas's Hospital we found the floors of oak. In all cases we found that the patients dined in the wards, and that there was no special room set apart for that purpose. The nurses' rooms, which have glass doors communicating with the ward, are excellent in design, as the nurse is enabled at all times to overlook the whole of her charge. The construction of the *water-closets* is a matter of much importance. Those in St. George's Hospital and Middlesex Hospital appeared very excellent. In addition to their being self-acting, they are so constructed that when a person enters and is seated, an open window, which at all times secures the perfect ventilation of the closet, is immediately closed, and secures the patient from exposure to cold. The *scullories* are small, and for the purpose of avoiding any accumulation of dirt, are only furnished with what is absolutely necessary. The construction of the scullery window in Middlesex Hospital is a great improvement, as it shuts out all noxious gases, and keeps up a constant state of efficient ventilation. The *bath* is frequently placed in the scullery, and, together with *washing-stands* for the use of the patients, appear to be very appropriately situated. In the Manchester Hospital we greatly admired some baths of block tin, which are formed with the concavity shallow, and scooped out equally at all parts. With the exception of a few hospitals, most of the wards are provided with a large box for containing coal, in the place of having a coal depôt attached to the wards. This arrangement is much to be preferred, as the box is easily moved to and from the cellar by the lift, and all dirt arising from coal dust is thus avoided. The *operation room* is generally placed near to the centre of the hospital. That of St. George's Hospital is very perfect, and possesses a most admirably constructed operating-table,

Heating, lighting, and washing of wards.

We found that the manner in which the *heating*, *lighting*, and *washing* of the wards are carried out is generally uniform. Open fires are almost universally employed, and we invariably found them considered much more wholesome and conducive to health, than any other method of *heating*. In the Manchester Hospital the wards are ordinarily heated by means of a hot pipe in which the steam from the boiler circulates. This, however, is aided by open fires when required. In the Southern District Hospital, Liverpool, the fresh air for the supply of the wards is admitted at the basement floor, over a series of hot metal plates, from which the air thus warmed is conducted through tubes into the wards. It is said that the temperature of the wards can thus be constantly kept as high as 60° or 70° Fahr., but that it is easily deranged by want of attention. Each ward is generally *lighted* by a small jet of gas, which is allowed to burn during the night. This is very desirable on many accounts, and is worthy of adoption. Gas is also introduced into the operation rooms, which, for very obvious reasons, is a great advantage. In the General Hospital, Birmingham, the floors are made of oak, and once in every three months, after being well washed with soda, soap, and water, are rubbed bright with wax. Dirt is removed in the interval by means of a hard brush, and the use of water for this purpose is absolutely forbidden in the interior of the wards, as erysipelas, and other unhealthy diseases, are considered by the medical officers of that institution to arise in part from the lavish employment of water in washing the floors. This fact was generally admitted, and we found that the floors of all the other hospitals were of fir, and washed completely once a week by a hard brush with water (in small quantity), soda, and soap. In addition to the employment of a small quantity of water, a dry cloth is carefully used, to absorb all that remains after the floor is cleansed, and we wish to draw special attention to this point, as the washing and scouring of the floors with sand is very objectionable.

Heating.

Lighting.

Washing.

Ventilation of wards.

With regard to the important subject of *ventilation*, we have seen a great diversity of systems, and observed that the most complicated and expensive is that which has been generally found to be the least effective. In some we found furnaces and towers specially built for this purpose, but now entirely cast aside. In those where ventilation was most perfect, we found the system simple and natural. *Fresh air* was allowed to enter at the windows by various contrivances, as well as through apertures in the floor, communicating with the external air. The *contaminated air* was allowed to escape through ascending flues, commencing at the ceilings of the rooms, and terminating at the roof.

Admission of fresh air.

In the majority of the hospitals *fresh air* is admitted through the windows by hopper-mouthed ventilators. In Middlesex Hospital, however, the following most admirable plan is adopted :—The window is divided transversely into three parts, which are capable of being opened by means of an iron lever, so that any amount of fresh air can be admitted. The general diffusion of the air is found to be so perfect by this contrivance, that not the slightest draught falls upon the patients. The same arrangement exists at the Brussels Hospital, only that each window has two of the slides moveable instead of three. In all the hospitals, *fresh air* is also admitted through grated apertures in the floors, communicating by tubes with the outside of the building. In the Manchester Hospital the air in the tubes passes over the steam pipes which run through the corridors, and is thus heated in its passage to the wards. The manner in which it is admitted in the Southern District Hospital, Liverpool, has been already mentioned when describing the methods of heating the wards. In the new part of St. George's Hospital, the wards are supplied in a very singular manner. A shaft, commencing by an open mouth, near to the roof of the building, conducts the fresh air into an air chamber in the cellar department of the hospital, from which a set of tubes conveys it, by well-ascertained laws, to apertures in the ceilings of

the wards. The superior density of the cold fresh air then causes it to fall to the bottom of the wards, thereby displacing the vitiated or heated air, which escapes by other apertures in the ceilings, and passes out at the roof by the ascending flues. With these exceptions, we found that the plan upon which the fresh air is admitted into the wards by this channel is the same as in our own infirmary, namely, tubes running under the floors and communicating at one end with the external air, and at the other with openings in the floors of the wards.

Escape of vitiated air.

The escape of the *contaminated air* is generally sought to be accelerated by causing the ascending ventilating flues to run to the roof alongside of the chimney, and even by more active arrangements for heating it, and thus producing a draught. Those in the old part of St. George's Hospital are conveyed from the ceilings of the wards to the large fire for heating the boilers situated at the basement story, by which means the contaminated air is literally sucked out of the wards by the fire. In the Southern District Hospital, Liverpool, a fire is placed in the common expanded termination of the flues, at the roof of the hospital, to effect the same purpose, and it may perhaps be interesting to remark, that this contrivance is mentioned in our statute book as having been carried into effect in the Newcastle Infirmary, as far back as fifty years ago. In the General Hospital, Birmingham, the chimney flue, from a fire at the basement story, runs through and heats a shaft into which the flues ascending from the wards open. A similar arrangement exists in Middlesex Hospital. The new wards in St. Thomas's Hospital have arched concave ceilings, which assist the escape of the vitiated air into the openings of the flues, and here, as in the new part of St. George's and London Hospitals the flues simply run upwards alongside of the chimney, without any further arrangement for accelerating the ascent of the air. The terminations of the flues at the roof of St. George's Hospital, are guarded by valves of paper, and in St. Thomas's Hospital by moveable slides, so as to prevent any down blasts of air.

Bedsteads, beds, &c.

We found the patients' *bedsteads* made of iron. They are generally very neat, move on castors, and have the bottom of the bedstead made of thin elastic iron hooping. Those in the Queen's Hospital, Birmingham, are particularly neat, and for the most part have been presented to the hospital. All the

Beds.

beds are composed of hair in the Manchester Hospital, the Queen's and General Hospitals, Birmingham, and Middlesex Hospital. Cocoa-nut fibre has been used in several, but is found to be much inferior to hair. Flock is universally condemned as being one of the principal causes in the production of the endemic diseases of hospitals. Straw frequently changed is used in some; but the hair mattress, from the ease with which it can be washed and dried without injury, and from its elasticity, and the fact of its not absorbing noxious effluvia, is by far the most healthy kind of bed. A hair mattress of two inches in thickness is found to be very comfortable when placed upon the elastic iron hooping, and is most economical in the end. The

Counterpanes.

counterpane consists always of a thick cotton rug, neatly figured with the name of the hospital worked

Curtains.

upon it. Striped cotton *curtains* surround the heads of some of the beds during the winter months of the year. The bedsteads are generally prevented from approaching and injuring the walls by means of an iron rod fixed to the floor at the distance of a few

Cupboard.

inches from the wall. A small wooden *cupboard* or closet is generally attached to each bed for the reception of the tea cups, &c., of each patient, and a copper *boiler* is fixed to one of the fire-places of each large ward for the use of the nurse and patients. The medicine, in some of the hospitals, stands in a very

Bracket for medicine.

orderly manner upon a small *bracket* on the wall at the head of each bed. There is also, generally, a

Closets and presses for clothes.

closet under each window, for the purpose of accommodating the clothes of patients who are able to go about; whilst a *press* in the nurse's store room contains the clothes of patients who are permanently confined to their beds. We were much pleased at the London Hospital to see suitable prayers printed on pasteboard, together with the New Testament, conveniently placed at the top of each patient's bed, so as to be ready at all times for use; indeed, the attention which is paid in every way to the spiritual wants of the patients of this hospital is most praiseworthy.

Bibles a prayers.

The *kitchen department*, and the construction of the *cooking apparatus* of hospitals, have been greatly improved of late years. Great economy and saving of labour have been secured in the working of the whole, by the compact and simple arrangements which have been introduced. We were particularly pleased with those of Middlesex Hospital, and consider them well worthy of adoption. Those of the General Hospitals at Liverpool and Birmingham were also very good. Steam is extensively made use of, and the simple and superior manner in which the patients' food is divided and sent into the wards in a hot and comfortable state, in the Middlesex Hospital, is very admirable.

Kitchen department.

The arrangement in the *washing* and *laundry department* has also been very greatly improved. A regular system is followed, and many mechanical aids introduced, which tend materially to diminish the labour of working this branch of domestic economy. Here also, as indeed in every department of this hospital, we were highly gratified at the perfect arrangements in the Middlesex Hospital. We would wish to call attention to the improved methods of drying clothes, and more especially of the mattresses, as it is most important that the labour attending the washing and drying department of an hospital should be made as healthy, light, and expeditious as the latest improvements can effect.

Washing and laundry department.

The *baking* and *brewing* are generally carried on within the hospital, in convenient rooms; and are, for the most part, under the care of one person, who has also charge of the *boiler* for supplying water to the baths and to the hospital generally. This is usually a simple steam boiler, and in almost every hospital serves many very important purposes. In the Manchester Hospital, for instance, the steam that heats the wards is conveyed to the laboratory, where it boils all the decoctions, and assists in many other dispensing operations; cooks most of the food in the kitchen; serves for many purposes in the washing department; is used for vapour baths; and, lastly, heats a cistern of water at the roof of the institution, which supplies the baths, and hospital generally, with warm water. The economy and usefulness of this arrangement needs no comment, and it is that which is adopted in all the lately-improved hospitals we visited. In connexion with this department, and with the kitchen and laundry, we noticed the general adoption of *hoists* for the purpose of conveying the food, fuel, linen, and even the patients themselves, from the basement and ground floors, to the upper stories of the hospital; and we cannot too strongly recommend the use of these convenient and labour-saving vehicles. We found that *gutta percha speaking tubes* were used in the Manchester Hospital and the Middlesex Hospital, for the purpose of easily communicating with the nurses at the most distant parts of the establishments.

Baking, brewing

Steam boiler.

Hoists.

Gutta percha speaking tubes

The *dead house* and *examination rooms* are always placed together at some convenient part of the building communicating with the yard at the back entrance. This arrangement allows the friends to visit or remove the dead without interfering with the interior of the hospital. We have noted many improvements both in the internal arrangements, and in the lighting and ventilation of those parts of the building. In some hospitals a hoist from the dead-house communicates with the wards at the upper stories of the building. In the General District Hospital, Liverpool, the arrangement is very good. In the London hospitals these rooms, with the library,

Dead house and examination rooms.

museum, and lecture-room, are generally associated together in a building attached to one of the wings of the hospital.

Store rooms for chaff, straw, &c., *coal depôts*, a *room* for a *fire engine*, *stables*, and *sheds* for other necessary purposes, are possessed by each hospital, according to its wants, and situated in such places as are most convenient for use.

With regard to the *distribution of nurses to the wards*, we found that there is generally a *superintendent*, with two or three *under-nurses*, who are associated together in the charge of a set of wards, containing from thirty to forty or fifty patients. The superintendent is usually a better-educated person, and responsible for the proper management of the wards, taking especial charge of the administration of the medicine, liquors, and food of the patients. The under-nurses are subdivided into day and night nurses, and perform the ordinary duties of nursing, and of cleansing the patients and wards. The washing of the bed-clothes, and of the foul linen, is done by two or three *washers*, who sometimes reside within the hospital, or are especially engaged for that purpose. Washers.

* * * * *

(Signed) Peregrine George Ellison.
James Dent Weatherley.
John Brunton Falconar.
Thomas Michael Greenhow.
John Dobson.
Charles John Gibb.

APPENDIX XLI.

Note on Artificial Systems of Ventilation and Warming in the Parisian Hospitals, by Dr. Sutherland.

In a number of hospitals ventilation is effected by windows and doors, and warming by stoves placed down the centre of the wards.

This system of ventilation and warming is comparatively easy on account of the long narrow form of the wards in the Parisian hospitals and the number of windows, which generally amount to a window for every two beds, and sometimes to a window for every bed, the windows being placed on opposite sides of the ward and opposite each other, with the beds between them.

As an illustration of the extent to which economy of fuel has been carried in France, it may be stated that, while to warm a given cubic space to a given temperature by an open fireplace, consumes a quantity of fuel equal to 100, there are stoves in use which produce the same result with a quantity equal to $13\frac{3}{4}$.

Artificial ventilation is used in several hospitals and in a large number of public and private establishments in combination with means of warming the air, introduced both for economy in heating and to ensure the passage through the ward or apartment of a much larger quantity of air in cold weather than could be introduced unless the air were at the same time warmed.

The minimum quantity of air considered requisite to preserve sick wards in a healthy state is about 2,200 cubic feet per bed per hour, and the air introduced is raised to a temperature of 60° Fahr.

The mere introduction or abstraction of a given quantity of air from the ward is not, however, considered a sufficient test of its ventilation.

The points where the air is introduced, and the points from which it is abstracted, are elements in all the plans of ventilation in use, and are considered of equal importance with its quantity and temperature.

These three elements, then, are—

1. The quantity of air introduced.
2. Its temperature.
3. The points of entrance and exit ; and
4. That apparatus which fulfils the conditions at the smallest original and current cost, is, of course, the preferable one.

That special peculiarity which characterizes the existing French methods of artificial ventilation is abstracting the air below the level of the patients' bed, instead of from the top of the ward. It is presumed by arranging the apertures for the exit of foul air near the floor, that emanations, of whatever kind, proceeding from the sick are prevented from becoming diffused through the air of the ward, that they are carried directly away from the sick bed, that each patient is enveloped in an atmosphere peculiar to himself, and that in cold weather the lower and colder strata of air in the ward are removed, instead of the higher and warmer strata, as would be the case if the ventilating openings were near the ceiling.

In proof of the importance of this point, the well-known fact of the higher temperature of the upper strata of air in apartments ventilated from the ceiling is adduced. Thus in one of the minor theatres of Paris so ventilated, the temperature of the air on the level of the floor was found to be 18° 36′ Cent. and 34° 52′ Cent. at the height of 21 feet from the floor, showing a difference of 27° Fahr.; while in Lariboisière the temperature is the same throughout the whole cubic contents of the ward.

The practical result, as regards the sick, of this method of ventilation is stated to be,—

1. The disappearance of the odour peculiar to sick wards, especially in those containing wounds.

2. The complete disappearance of epidemic erysipelas, hospital gangrene, and phagedena, while these diseases still show themselves in wards which have not been ventilated in this manner.

There are three methods at present in use for renewing air in the wards of these hospitals, and each method provides for warming the fresh air introduced. They are,

1. The method of M. Léon Duvoir.
2. The system of M.M. Thomas, Laurens, and Grouvelle.
3. That of Dr. Heecke.

A fourth system of ventilation and warming differing in some respects from any of the others is being introduced into the new military hospital at Vincennes, that of M.M. Grouvelle, Chevalier, & Co., which has been selected by the French government after a careful examination into the operation of the other systems.

1. The system of ventilation and warming introduced by M. Léon Duvoir is an arrangement of hot-water pipes, heated by a furnace, and so disposed that they create a current sufficient to draw out of each ward a quantity of air equal to at least 2,220 cubic feet per bed per hour, while the pure external air entering the ward to supply the place of the impure air extracted is heated up to a temperature of about 60° F., by being made to pass over surfaces heated by the same hot-water pipes used for forming a partial vacuum and creating a current, the heated surfaces being sufficient in extent to raise the admitted air to the required temperature.

By this apparatus the whole heat of the furnace, without any intervening loss from machinery, is expended in moving and heating the mass of air in the wards. The end is obtained as follows, at the Hospital la Riboisière, one of the establishments where the apparatus is in use.

The hospital is built in separate pavilions, in three of which M. Duvoir's system is in operation. Each pavilion contains three wards, one over the other, with 32 beds to a ward, arranged two and two between the windows, and also three small wards each containing two beds. Between each two beds there is, close to the floor, an aperture about eight inches square (16 apertures in each ward) opening into as many outlet shafts, and down the centre of the ward there are three hot-water pedestals up through the middle of which the fresh air is introduced.

There is a small furnace on the lower flat of each pavilion which serves for heating cataplasms, and a boiler, the tubes from which are carried in spirals up in the chimney of the furnace to the roof of the pavilion, where the pipes enter a reservoir of hot water in a chamber, the air of which they heat. There is a chimney from this chamber rising above the roof of the building, and the shafts for drawing off the air from the wards after coalescing also enter it. The hot-water vessels rarify the air in the chamber, and cause a current up the chimney, and the partial vacuum so formed is supplied by the impure air drawn from the wards by the outlet shafts. After having created the necessary current for ventilation the water tubes are conducted down to each ward, where passing under the floor they enter and heat the hot-water pedestals, and after heating the inflowing air they return to the furnace.

The entire process of ventilating and warming is set on foot by simply lighting a fire.

The apparatus is so constructed that its heating power can be augmented in cold weather, or entirely cut off in hot weather.

It appears from a number of experiments that the mean quantity of foul air extracted from the wards by this method amounts to 2,590 cubic feet per bed per hour.

M. Duvoir's plan has been in operation for 15 years in a number of establishments, and no accident appears to have arisen from it.

The largest single apartment where it is used is the church of the Madeline at Paris, the interior of which is 100 feet in height, and the cubic contents 2,220,000 feet. The water contained in the apparatus for heating and ventilating this space is 10,000 gallons, and the quantity of warm air passed through the church amounts to 555,000 cubic feet per hour, equal to a fourth part of the cubic contents, but, judging from personal observation, this quantity is by no means sufficient. The difference in temperature in the whole height of the building does not exceed 2·7° Fahr.

The cost for ventilating and warming three pavilions at La Riboisière, containing each 100 sick, night and day during winter, for ventilating by night only during the summer, for ventilating the hospital latrines and foul linen stores all the year, and for supplying warm water for the patients, amounted in 1855 to 15,952 fr. 70 c., including the maintenance of the apparatus, or about two guineas a bed per annum.

Two objections have been raised against this system: one, the large amount of space occupied by the apparatus under the roof; the other, that it does not provide for the supply of air being taken solely from the inlets.

Experiment has shown that the air drawn out by the ventilating shafts is about double the quantity which finds its way in by the pedestals, the remainder entering by the doors, and by crevices in the windows. It is replied to this objection that the air so entering is nevertheless consumed in the proper ventilation of the wards, while the important feature of the system, namely, compelling the whole air to pass over the beds down to the floor, before it enters the extracting shaft, is preserved intact.

The apparatus at La Riboisière is capable of maintaining the temperature of 60° F., but to do so it requires careful firing. The temperature is generally lowest on the ground floor, where the ventilation is also the most active; but, by a slight modification of the apparatus, the amount of air passing through the ward, as well as the temperature, might be equalized for each of the three flats.

M. Léon Duvoir's method of ventilating and warming has the merit of extreme simplicity, combined with economy and the absence of all machinery. The amount of ventilation it gives exceeds that required by the contract by upwards of a fifth part; but it is doubtful whether the quantity of air is sufficient to preserve the wards in the healthiest possible state. The inlets are too small to supply the amount of air drawn off by the shafts. If we represent the volume of air passing up the shafts, when the doors and windows of the wards are closed, by 119, the quantity is immediately raised to 160 or 170, according to the extent to which the windows are open. This is a defect, not so much in the system as in the proportions adopted between the inlets and outlets. Foul air might be drawn into a ward by this want of proportion, as was actually the case in one instance at La Riboisière, where from the accidental opening of the door of the bath, an influx of humid air took place into one of the wards. The defect, however, admits of easy remedy.

2. The system of Thomas, Laurens, and Grouvelle, may be described as the reverse of that of M. Duvoir. M. Duvoir's system provides for the ventilation of wards by extracting air at given points, while the one now under consideration fulfils the object by injecting air at given points and by providing for its exit a similar number of shafts and openings as exist in M. Duvoir's plan. The same structural arrangements of the wards would answer for either system, the only difference being that in the one instance the air is extracted, and in the other it is injected.

For this latter purpose there are two high-pressure steam engines placed in the basement of one side of the hospital, and each engine works a large fan wheel, supplied with air by means of a shaft from the top of the building, and propels the air through a large iron pipe, suspended from the roof of the basement, which pipe is subdivided so as to supply a branch for each ward of the three pavilions into which this system has been introduced. The air tube passes under the floor of the ward in its length, and in this situation the joints are left open in order that air may escape; but the chief entrances of the air are from hollow pedestals down the middle of the ward, from which it escapes at about the height of five feet from the floor.

The two engines are not intended to be used together, unless the prevalence of an epidemic in the hospital should require a larger ventilation. Two are provided, in case of an accident happening to either of them.

The boiler is worked at a pressure of five atmospheres, and after driving the engine the steam is received into a pipe running alongside the air duct, and giving off a branch to each pavilion, which is again subdivided, and sends a branch down the centre of each ward along with the air pipes. The hollow pedestals already mentioned, through which the air is forced into the ward, are full of water, and receive into their interior the steam pipe in the form of a spiral. Each of these hollow pedestals has twelve open vertical tubes, through which the external air passes to enter the ward, and it becomes heated in the traject by coming in contact with the heated sides of the tubes. The water proceeding from the condensation of the steam is conducted back into a reservoir, from which it is pumped to supply the boiler. The steam pipes are all covered with a non-conducting substance, to prevent the loss of heat until they arrive in the wards. During very cold weather the waste steam is not found sufficient to

warm the air, and in such a case an additional quantity of steam is supplied direct from the boiler. In the summer, when the wards do not require to be heated, the waste steam is used for heating baths. The boilers supply the laundry with steam power, and also the usual baths. Each steam engine is about 15 horse power, and only a part of this power is used for ventilating.

The fan makes about 400 revolutions a minute, and there are the means of freshening the air by throwing a small jet of water on the fans. M. Grassi* and the government engineers† have made a number of experiments to show the operation of this system of ventilation, which, as we have seen, purports to draw a supply of fresh air from the summit of the hospital to the underground basement, where the fan is situated, to propel the air along a tube to each of the nine wards so ventilated, and to provide for the exit of the air by openings on the level of the floor, 16 in each ward.

M. Grassi found that when all the doors and windows of the chamber containing the fan were shut, and the air apparently drawn only from the roof of the building, if the total quantity of air sent to the wards were represented by 1, that drawn from the roof would be represented by 0·562, the remainder 0·438 being drawn from the basement itself. This fact has been made the ground of objection against the system, for it has been stated by M. Castellan‡ that the close damp smell peculiar to underground places can be detected in the air as it enters the ward, and hence that the system supplies air only partially pure.

It appears that a quantity of fine dust drawn from the basement is carried along the air ducts by the current. Complaints have also been made of the vibrations of the blower having been heard in the wards.

These defects could easily be remedied by suitable works of construction to ensure the fans being supplied with air solely from the roof.

The air is distributed by tubes to three pavilions, situated 68 feet apart, each pavilion containing three large and three small wards, and 102 beds. The quantity of air required by contract for each bed is 2,220 cubic feet per hour. According to M. Grassi's experiments, although the results obtained by the Government engineers are somewhat less, the actual quantity of air thrown in by a single engine and fan is at the rate of 4,255 cubic feet per bed per hour. This amount is unequally distributed among the pavilions on account of the length of piping the air has to pass through. The pavilion nearest the blower receives at the rate of 4,847 cubic feet per bed per hour. The next pavilion is ventilated at the rate of 4,662 cubic feet per bed per hour, and the most distant pavilion at the rate of 3,256 cubic feet per bed per hour. This inequality of distribution admits of remedy by suitable registers.

The quantity of air entering each of the three wards of a pavilion also varies. Thus, of the three wards in the pavilion nearest the blower, the ward on the ground floor receives 5,883 cubic feet of air per bed per hour. The first floor ward 4,329, and the second floor ward 4,403 cubic feet per bed per hour. Similar irregularities in the distribution of the air are observed in the other pavilions.

It is important to remark that the most remote ward from the blower receives 3,478 cubic feet per bed per hour, upwards of 50 per cent. more than the contract amount. The temperature of the different wards varies within a limit of from 2° to 3° F.

We have already seen that all the air drawn out of the ward by M. Duvoir's method is not supplied by that which enters through the hot-water pedestals; and in the present case it is found that all the air which is driven into the wards by the fan wheel does not escape by the openings provided for its exit, and hence the plan or its application is to that extent defective. Most of the difference arises from the fact that the orifices for the escape of the air are contracted by registers, which diminish the outward current by about 29 per cent. The quantity of air which actually escapes from the wards through the registers is about 59 per cent. of the air injected, the remainder escaping by doors, windows, and crevices. If the registers were removed the whole air injected, except a little more than 11 per cent., would escape in the manner required by the system. In other words, the quantity of air that would escape in conformity with the ventilating system would be not much less than double what is required by the contract.

A more important objection, however, arises from the fact that the opening of a window or door deranges to a considerable extent the system of ventilation *as a system.* The air is still forced in, but it ceases to escape in the same quantity by the lower openings. When four windows in a ward are freely opened the quantity of air escaping by the outlet shafts is 71 per cent. of the quantity which escapes when the windows and doors are closed. The opening of a door alone diminishes the quantity by about 9 per cent.

The facts prove that the outlet shafts themselves exercise a powerful draught on the air in the ward, altogether apart from the quantity of air injected by the fan; but as the openings of these shafts are on the level of the floor, and are placed there for the express purpose of enabling the injected air to sweep downwards over the beds before it escapes, it is clear that when the windows are opened, wherever the air comes from, it cannot pass over the beds as it does when the windows and doors are shut. This is a defect in all these systems which can only be prevented by an intelligent superintendence, or by a suitable construction of doors and windows, to ensure that, as nearly as possible, all the air shall enter and escape from the wards only by the inlets and outlets required to fulfil the essential conditions of the system of ventilation, which are, as we have already seen, that the emanations from the sick are to be swept away from the beds at once without intermingling with the general atmosphere of the wards.

The degree of ventilation *in different parts of the same ward* is found to differ very considerably. On measuring the quantity of air escaping from each of the outlet shafts, it was found that in some shafts it is two or even three times the amount that it is in others. The beds in the middle of the wards have the largest amount of fresh air sweeping over them, while, generally, those at the ends have the least. This is a grave defect, but one remediable by the use of proper registers for regulating the size of the outlets.

There are no water-closets in the Hospital La Riboisière, but only open privies; and to prevent the emanations entering the wards, both systems of ventilation provide that a current of air shall pass down the tubes to carry away the effluvia.

The quantity of air thrown into the wards by the fan wheel is so considerable that the fact has been used as an argument for diminishing the amount of cubic space for the sick. One of the jury of the Paris Exposition, indeed, expressed an opinion that with such an amount of ventilation the sick might be put into boxes! an opinion which indicates very little practical acquaintance with the subject.

The first cost of the apparatus for the system of Thomas and Laurens, was about 4,000*l.* more than the cost of M. Duvoir's apparatus for the same number of sick. There is a difference of opinion as to the comparative current cost, because the amount of work done by the apparatus differs in each system.

* Grassi, Étude Comparative des deux Systèmes de Chauffage et de Ventilation, etc. 1856.

† Rapport du Chef du Génie sur le Concours ouvert pour la Fourniture des Appareils de Chauffage et de Ventilation á l'Hôpital Militaire de Vincennes. MS.

‡ Castellan Étude Comparative. Paris, 1857.

The advocates of M. Duvoir's plan estimate the current cost, as already stated, at about two guineas per bed per annum for warming and ventilating, while the advocates of the system of Thomas and Laurens estimate the cost of that particular system at about the same rate. The advocates of Duvoir's plan, however, state the cost of that of Thomas and Laurens, when the interest of the additional first cost is added, at 41,907 francs 61 centimes per annum, amounting to upwards of 1,000*l.* per annum more than the cost of Duvoir's for the same number of beds; but at the same time the wards are ventilated by the former system day and night, all summer, while, on Duvoir's plan, the wards are only ventilated at night during summer; the day ventilation being effected by open doors and windows.

The quantity of air which passes through the wards is also much greater. In Duvoir's plan it is 2,590 cubic feet per bed per hour, while in the plan of Thomas and Laurens it is 4,255 cubic feet per bed per hour.

After comparing the sensible effects of the ventilation in the wards under each system during cold weather, I should certainly give the preference to that of Thomas and Laurens. But the advantage is due solely to the larger amount of air introduced, and not to any superiority of one system over the other. It follows that to give the air of a ward the highest degree of freshness, the amount of air passing through it should be at least double the amount required by the French hospital contracts, or about 4,000 cubic feet per bed per hour.

3. The apparatus of Dr. Van Heecke is in operation in one of the pavilions at the Hospital Beaujon. The pavilion consists of three wards, with 20 beds in each. At each corner of the wards is a square extracting tube, and each tube has in it two square openings, one near the level of the floor and the other above the bed. These openings and tubes form the outlet shafts for the foul air, and the air ducts communicate with a small archimedean screw driven by a steam engine in the basement of the building, which extracts the air from the wards. Fresh air is admitted by a pedestal in the centre of each ward, and the air is warmed before entering the wards by being made to pass through a stove. This system of ventilation has the merit of great cheapness, since a small half-horse power engine is sufficient to ventilate three wards for 60 patients. The system of outlets is by no means so good as in the ventilating arrangements at La Riboisière, which take the air from between every two beds. The quantity of air extracted by this process is 1,462 cubic feet per bed per hour, but six-tenths of this amount enter the wards by other openings than those provided for the ingress of fresh air. The arrangements are therefore imperfect.

The archimedean screw is also used by Dr. Heecke for propelling air as well as for extracting it.

4. The system of Grouvelle, Chevalier, and Co., introduced into the new military hospital at Vincennes, is similar in principle to the system of extraction by ventilating shafts used in this country. Those portions of the hospital to which it has been applied will contain 480 beds. The outlet shafts are arranged as in La Riboisière, one between every two beds, and in each shaft there are two ventilating openings, one on the level of the floor and the other above the bed. The former is for ventilation during winter, the latter during summer. These outlet shafts descend in the thickness of the walls to the basement of the building, where they join to form a large oval air sewer, communicating with the ventilating chimney. The draught is produced by a fire at the base of the chimney.

Fresh air is taken from the basement below the level of the ground, (which is a serious defect,) by very large air ducts rising from the basement in the thickness of the end wall of each pavilion, and giving off branches under the floor of each ward, and the air enters the ward partly by gratings, partly through pedestals ranged down the centre of the wards.

The air is to be warmed in winter by being made to pass over hot-water vessels and pipes before entering the wards.

The quantity of fresh air which must be supplied under the contract is 2,220 cubic feet of air per bed per hour.

This system of ventilating and warming was selected by the French Government after a concours, to which a number of plans were sent in, and after a careful scientific inquiry into the operation of all the systems of artificial ventilation and warming in use in the Parisian hospitals.

It may be useful to state the estimated cost of the four systems which complied with the terms of the concours.

1. *Cost of Construction.*

	francs.
a. Grouvelle, Chevalier, and Co.	130,211
b. Léon Duvoir, Leblanc	154,239
c. René, Duvoir, and Co.	188,000
d. Dr. Van Heecke	197,211

2. *Annual Cost.*

	francs.	cnts.
a. Grouvelle, Chevalier, and Co.	27,921	75
b. Dr. Van Heecke	31,095	40
c. Léon Duvoir, Leblanc	32,100	50
d. René, Duvoir, and Co.	46,046	10

3. By capitalizing the first cost and a ten years' outlay for current annual expenses, the total charge for warming and ventilating the hospital at Vincennes, for 480 beds, at the rate of 2,220 cubic feet of fresh air per bed per hour, stands thus :—

	frcs.
a. Grouvelle and Co.	409,428
b. Léon Duvoir, Leblanc	475,244
c. Dr. Van Heecke	508,165
d. René, Duvoir, and Co.	648,461

It would thus appear that the first cost of the apparatus for warming and ventilating, under the plan selected by the French Government, is somewhat under 11*l.* per bed; the annual outlay about 2*l.* 6*s.* per bed, and the capitalized cost 34*l.* per bed.

The special feature in which this system differs from the others in use is the large size of all the inlet and outlet shafts for air. These greatly exceed in dimensions those in use under the other systems.

The object of this is to facilitate the movement of so large a mass of air, and to save the inevitable loss of force from extracting air through narrow ducts and apertures. The military engineers selected this method for the hospital at Vincennes, on account of its greater cheapness, and because they have arrived at the conclusion, after numerous observations, that a much better ventilation is obtained by extracting air from, than by propelling air into, wards. The first method ensures, they say, the immediate removal of emanations from the sick, while the second may create a blast in a ward without necessarily ensuring good ventilation. They object, also, to the use of machines, any accident to which would stop the whole ventilation of the hospital. The system of extraction by an air shaft is in use at the prison Mazas at Paris. The air ducts in that instance are very large, and the construction simple; and it is found in practice, that $1\frac{2}{10}$lbs. avoirdupois of coke extracts 45,584 cubic feet of vitiated air in winter, and 31,801 cubic feet in summer. The quantity of air to be extracted from the whole hospital at Vincennes amounts to 939,800 cubic feet per hour; and the cost of coke for this and for warming the air when required, is estimated at about 24 shillings per diem.

APPENDIX XLII.

Paper given in by Mr. Martin.

The following note was prepared by Mr. Martin by desire of Lord Metcalfe, and handed by him to Lieut.-General Sir George Murray, at a meeting held at the Colonial Office by order of Lord Stanley, on the 16th of July 1842:—

1. "The author of this note has satisfied himself, from an extensive range of observation in the East Indies, that great loss of life, injury to health, and sacrifice of the public money, have resulted from the present modes of locating and constructing barracks and hospitals for the European troops there; and his information, derived from printed and other sources, leads him to conclude that similarly injurious results are also produced in various of Her Majesty's colonies, from similar causes.

2. "To obviate for the future such extensive waste of life and money, and with a view, likewise, to improve such existing buildings as may admit of amendment, it is proposed that standard plans and models be prepared for barrack and hospital accommodation, in scale proportioned to certain given numbers of men, and suited to the various and contrasted climates occupied by British troops. The most cursory observation will satisfy us, that of certain given plans one only will prove excellent; whereas now all over the British possessions we find in existence every conceivable plan, ending in no approved or fixed plan whatever; so that, in fact, that which ought to be settled, and is very easily capable of being settled by regulation, is up to this day left, as I have stated, to the fancy of individuals.

3. "It is not apprehended that either difficulty or the expenditure of much time would be encountered by carrying out the proposed plan, provided it were undertaken by persons competent to the task; for the same plan of barrack and hospital accommodation would suit the climates of the East and West Indies, the Cape of Good Hope, Mauritius, Ceylon, China, and Australia, the stations of Gibraltar and Malta, and the Ionian Isles, while plans for the other colonies would be easy of settlement.

4. "To arrange and complete so desirable an object, it is respectfully suggested that a committee of engineers and medical officers be assembled in London, and that power be given, in furtherance of the purposes in view, to call in evidence such persons as may be supposed to possess experience and a knowledge of the subject." (Signed) J. R. Martin.

Sir George Ballingall, in the last edition of his admirable 'Outlines of Military Surgery,' says of the memorandum just quoted:—"This excellent suggestion has not been as yet acted upon, and consequently no established plan has been adopted for the construction of barracks and hospitals either at home or abroad."

APPENDIX XLIII.

(*Given in by Dr. A. Smith.*)

Papers showing the Necessity for a New General Army Hospital, which were submitted to Lord Panmure by Dr. A. Smith, in January 1856.

No. 1.

Memorandum relating to the Hospitals of Government which at present exist in Chatham and its Vicinity.

The hospitals at Chatham which belong to government are, the naval or Melville hospital, the Ordnance hospital, Fort Pitt general hospital, and the Spur Battery hospital. The first was built for the accommodation of the sick of the royal marines quartered at Chatham, and of such seamen as might be affected with diseases not to be readily managed on board the vessels of war of the station, whether in commission or laid up in ordinary. The second was erected for the reception of the sick of the soldiers of the ordnance department who might be stationed here, and it is now almost entirely occupied by sick of the line. The two others are specially for sick of the line; that in Fort Pitt being principally required for the wants of the invalids, and the other, or Spur Battery hospital, is allotted for the sick of whatever regiment may be quartered in the garrison; and any accommodation it can afford beyond that necessary for the corps, is made available for general purposes.

In remarking upon these different hospitals, I shall notice,—

1. The character of each as a building;
2. Their exterior appurtenances, equipments, and interior conveniences;
3. The number of sick which each is calculated to accommodate; and,
4. The medical and other attendance afforded.

The Naval or Melville Hospital.

This hospital has a magnificent appearance, and affords proof of its having been wisely planned and efficiently built.

Its site, which is upon gently sloping ground, renders it a conspicuous object on approaching Chatham from London, and is, of all the buildings at Chatham, the one which most attracts the attention of the traveller, and gives him an exalted idea of the liberality and munificence of the British naval department. It was erected in 1827, after a plan of Mr. Taylor, architect to the Admiralty, and built by Mr. M'Intosh, of Bloomsbury Square, London.

The structure is brick, faced with cement and Portland stone, so that it looks like a fine stone edifice; and it is agreeably ornamented with a massive colonnade, which extends the whole length of the building, and affords a comfortable place for the sick to walk under during inclement weather.

Behind and detached from the hospital are the requisite buildings for the wants of this establishment; and though these are not attractive, either from their architectural beauties or elegancies, they are, nevertheless, remarkable for their efficiency, amplitude, and neatness. Still further behind, and on a more elevated situation, are the dwellings of the medical and other officers belonging to the establishment, all of which are neat, ample, and commodious. The grounds around the building are of moderate extent, and are completely inclosed by a high brick wall, not, however, so situated as to limit the prospect from the establishment. They are neatly laid out, and as they extend considerably in front of the hospital, they offer a most agreeable scene for the sick to look upon, and seats are placed here and there, so as to afford in that respect the fullest comfort to such of the patients as are not bedridden.

Passing to the interior of this hospital, the like efficiency and adaptation for useful purposes, which

is characteristic of the exterior, is found to exist there.

The wards of the sick are of a proper size, neatly constructed, and well lighted and ventilated; each is calculated to accommodate about fourteen patients, and to afford besides a clear space of from two to three feet between any two bedsteads. To each ward is annexed a water-closet, which is so readily accessible from the ward that only severe bedridden cases are necessitated to comply with the calls of nature in the sick rooms in which they are treated.

The bedsteads of this establishment are of iron, and the bedding is ample, and of a superior character: each patient lies upon a hair mattrass, rests his head upon feather pillows, and a cleanliness and neatness is given to his bed by its being covered with a white quilt or counterpane.

The minor details are upon a like liberal scale; and everything connected with the hospital conspires to excite the approbation of visitors, and ensure satisfaction and comfort to the sick.

Two hundred patients, in addition to a considerable number of commissioned officers, can, without inconvenience, be accommodated in this hospital, and without withholding from any one of that number the enjoyments and advantages above stated.

The receiving into hospitals, and treating in them commissioned officers, is a practice, I believe, peculiar to the naval department, and, in my opinion, is a most politic one, and highly calculated to insure great advantages, both to the service and to individuals. Did a similar practice exist in the army many valuable lives would be saved to the service, and which are lost simply from a lack of many of the requisites necessary to aid the medical remedies employed.

The sick soldier has great advantages over the sick officer. The former is certain of having the necessary domestic attendance, the latter may or may not, according to the character of his servant; thus when the latter is irregular, the officer is in a measure left without the comforts, nay, even the absolute necessaries, for his condition; that is to say, he has only that portion of them which can be enforced for him by his medical attendant.

Besides affording a guarantee against such disadvantages, the practice furnishes a facility of curing disease not to be otherwise insured, as it permits of the proceedings and diet of the sick being properly regulated, and hence insures officers being rendered efficient in shorter periods than are required where the proper restrictions cannot be enforced.

The strength of the marines and seamen at Chatham can scarcely ever be so great as to furnish the proportion of sick which may be accommodated in this hospital; hence the establishment is at all times free from undue incumbrance, and the medical officer in charge feels a satisfaction in knowing that he is able to render through the establishment over which he presides all the medical assistance which is necessary to the interest of the public department to which he belongs; and hence his condition is very different to mine. He has suitable accommodation and conveniences for every man he finds requiring medical assistance: I, on the other hand, am forced, on any extraordinary increase of sick, to convert barrack-rooms of a most inferior description into apartments for their reception.

The expenditure in building the naval hospital and its appurtenances, is reported to have been about 60,000*l.*

The Ordnance Hospital.

This of the buildings here is second only to Melville hospital; and though it has neither the architectural beauties nor the magnificent appearance of the naval establishment, yet it is a building creditable to the department for which it was erected, and even to the country.

Like Melville hospital, it stands in a position which admits of its being visible to passengers journeying along the principal high roads, and hence draws forth the remarks and eulogiums of travellers. It was built during the years 1809, 1810, and 1811, and is supposed to have cost about 30,000*l.*

The conveniences necessary for the establishment, and which could not with propriety exist within the wall of the hospital, are afforded by a range of small buildings some way in rear of the principal edifice; and though they are not very deficient, they are, nevertheless, far inferior to those of the naval establishment.

The reserve grounds around this building are less extensive than those of the Melville hospital, but, nevertheless, they are sufficient. They are deficient, however, in neatness and regularity, and are without the seats which are always placed about the airing-grounds of the naval hospital, and which prove so acceptable and convenient for the sick who are permitted to take exercise in the open air. Like the grounds of the naval hospital, those of this establishment are also surrounded with a brick wall; but in front of the hospital it is sufficiently distant to in no way interfere with the prospect offered to the adjoining country.

The wards of the ordnance hospital are, in my opinion, rather too small, inasmuch as a room holding only eight or ten sick can never be kept so neat and clean as one accommodating twelve or fourteen. That important provision, a water-closet for each ward, of the naval hospital, is not extended to the ordnance hospital; but the next best substitute, viz., two or more conveniences of that description are adjacent to the principal passages, and open from them. In reaching these there is not the like facility, nor an equal safety to the patients, which exist in the naval establishment, nor can the same proportion of patients generally make them available, and so circumscribe the nuisance, which otherwise arises from a majority of the patients being forced to resort to close-stools placed in the wards.

In searching into the differences in this and other respects between the ordnance and Melville hospitals, I have been forced to surmise that medical opinions must either not have been required, or, if required, not allowed much weight in regulating the plan of the former establishment. Medical men only can rightly comprehend what is requisite for the wants of sick, and hence I fearlessly assert no hospital will ever be properly planned and placed excepting under their directions.

The beds of the ordnance hospital are of iron, and the bedding of the sick is similar to that of the line, namely, a mattrass stuffed with straw, a bolster filled with the same, and blankets, and a rug similar to what are in common use in barracks.

Fort Pitt General Hospital.

This hospital is situated in the interior of a small fort, and in consequence is scarcely visible beyond its own walls.

It consists of two heavy brick buildings, in parallel ranges, with a paltry colonnade abutting the range in which the principal entrance is placed. It was built in 1800 or 1801, and was, when finished, designated the "Royal Hospital."

There is nothing in its appearance to attract attention, and were it elsewhere, without its wooden colonnade, it would, probably, be surmised to be a merchant's warehouse.

For a time after it was built it was occupied as a barrack, and soldiers were quartered in it during the whole of the time Fort Pitt was building.

So far as I can learn, it was not appropriated to the purpose for which it was raised till the commence-

ment of 1814, when it was deemed necessary to abandon Chelsea, and fix the invalid establishment at Chatham.

The buildings—which from the purposes for which they are required, could not with propriety form a portion of the edifice destined for the accommodation of sick—are very limited in number, and of a character that makes me shrink from describing them. The washhouse is a sort of abutment to a portion of the wall of the General Hospital, and, from its want of breadth, will, scarcely permit of one person passing another; the drying and getting-up room of the clothing is in the tower, on the top of which is situated the water reservoir, and when entered gives the idea of a half-lighted vault.

The stores for the clothing not in actual use, and which is under charge of the purveyor, consist of long insecure wooden structures, out of which the rain is with difficulty kept by means of their roofs being covered with tarpauling; and such of the apothecary's stores as cannot be heaped into the small room allotted to him in the hospital, are kept in an underground cell, to reach which it is requisite to travel along a dark subterraneous passage of about a hundred yards in length. Many articles which had thus, from want of room, been long deposited under ground, in a situation where there existed no means of averting the injurious effects which result from damp and the want of due ventilation, were lately found to be perfectly useless by a Board which was ordered to examine and report upon them.

Having stated so much, it will scarcely be necessary to observe, that I consider there is not a single outbuilding attached to the general hospital which is tolerably fitted for the use to which it is applied.

There are no airing grounds to the general hospital like those attached to the naval and ordnance hospitals, so that the patients accommodated in the former have no opportunity, either whilst under treatment or when convalescent, of enjoying the advantages which result from moderate exercise in the open air, nor have they the comforts which an agreeable prospect is calculated to afford.

The only localities to which they have the opportunity of retiring, are two small inclosed areas immediately behind the hospital, each measuring 57 feet in length and 29 in breadth, and such as temporarily fly to them are required to encounter a most offensive effluvia which is incessantly issuing from the privies, which are actually situated within these areas, and which, during the prevalence of certain winds, prove even a nuisance in the interior of the hospital.

If the privies were of a construction calculated to circumscribe as much as possible those disagreeables, the necessary attributes of such places, the free space around them might be less contaminated, but as they are of the commonest and most inferior description, namely, a deep sink to receive the deposits, and a rude abutment along the brick wall to shelter from the weather the persons who may resort to them, and who are required to be cautious while occupied, as there are no regular seats, but simply a longitudinal beam in front, for the visitors to sit upon.

The presence of such offensive effluvia in the vicinity of these places, and which sometimes even extends into the interior of the hospital, is chiefly to be ascribed to the rude and open manner in which the privies have been constructed, and to the want of the means of carrying off the excrement as it is discharged. When the accumulation of the latter in the sinks is so extensive as to render it necessary to empty them, which is effected by forming a hole on the outside of the wall, and through it shovelling out the filth and removing it in carts, the nuisance is so great, for days together, that it is scarcely possible to approach the spot.

The interior of the hospital comprises, besides the office of the principal medical officer, the surgery, the apothecary's store, and the inspection room, eight large and two small wards for the accommodation of the sick. The former (the large wards) are of too great a size, and double the quantity of coals which is allowed, with the grates hitherto in use, would not keep every part of the ward during the severe winter of a temperature congenial to sick men.

No water-closets are attached to any of the wards, nor even are there substitutes for these opening from the passages, as is the case in the Ordnance Hospital. In the General Hospital the ease of the patient is either to cross one of the areas already mentioned, and resort to the open privies, or else to use a close-stool in the ward, and have its contents carried off and evacuated into the general receptacle. The latter practice, from the offensive smell it originates in the apartments, is far from a desirable one, nevertheless, it is that we are bound very generally to enforce, not only to guard against aggravation of disease from exposure to cold, but also to prevent accidents to weakly men, from their having a difficulty in keeping themselves from falling when they resort to the privies, owing to the rude open seats upon which they must of necessity rest.

The bedsteads and bedding in Fort Pitt general hospital are similar to what are issued for soldiers in barracks, and very different to what is granted to the naval establishment. Men in health may feel no inconvenience from lying upon straw, but in sickness, I am not prepared to consider such as probable. The minor equipments are in keeping with the more important ones already noticed.

The general hospital is now calculated to accommodate 252 sick, and when all the beds are occupied, there is exactly two feet between every two patients, but the interval will shortly be greater, as the bedsteads now in use, being unnecessarily broad, are being narrowed by order of the Ordnance Board, and when the alteration shall have been completed, there will then be an interval of thirty inches, instead of twenty-four as formerly.

The Spur Battery Hospital.

The character of this hospital is so inferior, that I feel ashamed to notice it; and I am certain there is not a medical officer in the British service who would regard it as a building which might permanently be employed for the accommodation of sick.

It is situated on a small fort behind Chatham barracks, is bomb-proof, and its exterior wall forms the inner side of the ditch. The windows of that side look into the ditch, and those of the lower or basement storey are below the level of the surrounding country; the rooms are small, badly furnished, and exhibit a disagreeable appearance.

The grounds adjoining this hospital, over which the patients may walk, are moderately extensive, but so uneven and uninviting that they are resorted to but little.

The wards are moderately large; but those of the upper storey are deficient in breadth, and have an unpleasant aspect from their being low and arched above.

Those of the under or basement storey are nearly square, moderately lofty, and are floored with brick; neither those above nor below are adapted for a permanent hospital.

There are no waterclosets within the walls of this hospital, hence the sick who are not in a condition to admit of their exposing themselves to the weather, must, as the only alternative, resort to close-stools in the wards.

The bedding and minor equipments are similar to those described as in use in the general hospital.

The Spur hospital, without unduly crowding, will accommodate 64 patients.

Medical and Inferior Attendants at these Hospitals.

The naval hospital is under the direction of a deputy inspector-general of hospitals, who resides in one of the buildings already described; and who, I believe, prescribes for a part of the sick, while the other part is cared for by the resident surgeon. In addition to the latter, there is a resident assistant surgeon, of some standing in the service, and what other assistant surgeons may be necessary.

The domestic attendants are partly males and partly females. The immediate attendants upon the patients being all females; and one of these, under the name of nurse, is allowed for every seven patients.

The remuneration to servants, I have reason to believe, is nearly the same as that granted under the sanction of the Secretary-at-War to the domestics employed in the hospitals of the line.

The ordnance hospital.—With the exception of three wards of this hospital, the whole establishment is appropriated for the accommodation of sick of the line.

The soldiers here at present who require to be admitted into hospital as sick of the ordnance department are about 200, and there is for the medical duties of this detachment an ordnance surgeon of considerable standing. The sick of the line accommodated in the ordnance hospital generally amount now to about 160, and are treated by the surgeon of the provisional battalion, assisted by a staff surgeon of the 2nd class, and three or four assistant surgeons. These medical officers have, in addition to their duties in the hospital, to inspect all recruits joining the garrison, which at times are very numerous; to make health inspections of the garrison; to examine all soldiers who join, with the view of ascertaining if satisfactory marks of vaccination exist, and to furnish medical attendance to the officers and their families, and to the soldiers' wives and their children, which, considering the strength of this garrison, nearly 5,000 men, is no easy duty.

Fort Pitt general hospital has at present a medical staff consisting of three staff surgeons of the 1st class, one the principal medical officer, two staff-surgeons of the 2nd class, and three assistant-surgeons, and these, without including the principal medical officer, are to treat the sick of the establishment, the daily average of which is 250. Besides the necessary ward duties, two of the staff-surgeons, one of them is in charge of the lunatic asylum, and is also required to inspect all ships embarking troops at Gravesend, and both are almost daily employed as members of Boards, in conjunction with the principal medical officer. The duties of the latter are to superintend and direct the general affairs of the hospital establishment, to carry on the necessary correspondence with the authorities at head-quarters, with the commandant of the garrison, to provide for and direct all the medical arrangements of the station, and to examine and decide upon the cases of all soldiers who arrive at Fort Pitt recommended to be invalided, and the performance of these duties occupy between seven and eight hours of each day.

The duties of the two other staff-surgeons, again, require for their performance about five or six hours of each day, and on many occasions even more, particularly those of Dr. Sillery, who is required to inspect ships at Gravesend, a duty which occupies him occasionally for hours in succession.

The Spur Battery hospital is under the charge of a regimental surgeon, and the duties required for it are performed by the medical officers of the corps for whose sick it affords accommodation.

General Observations.

The preceding remarks are only calculated to furnish information which will admit of an imperfect contrast being drawn between the principal hospital of the line in this kingdom and second-rate hospitals of two other establishments of the government.

This is not as it ought to be; a contrast, if such is to be desired, ought to be made between hospitals which ought to bear the same rank. The general hospital at Fort Pitt ought to be considered with the naval hospital at Haslar, and the ordnance hospital at Woolwich, the two latter being the chief medical establishments of their respective departments, and, therefore, to be classed with the general hospital at Fort Pitt, which is the principal medical establishment of the line.

As it regards Haslar hospital, I have reason to believe there is no medical establishment in the empire which makes an approach to it. It is, I understand, calculated to accommodate 1,800 sick, in addition to all the domestics and officers necessary for their proper treatment and management.

There were, I have heard, 1,840 sick dieted in that establishment in February 1808, and I have no reason to suppose there was any difficulty in supplying all with the proper accommodation.

The grounds belonging to this hospital are surrounded by a brick wall of about a mile in circumference, and the greater part of them are applied as airing grounds for the sick, are tastefully arranged with clumps of shrubbery, and well supplied with seats for the patients to rest upon.

In addition to these provisions for the wants of the sick, I believe elevated mounds, designated "Look-out places," have been raised to furnish a prospect which could not otherwise be enjoyed, and though such comforts cannot be insured without considerable expense, the original sacrifice is doubtless amply repaid by that attachment to the service which must necessarily be the result of such consideration and treatment. Besides being possessed of such advantages, the establishment is in every other respect provided in the most liberal manner, and it lacks none of the requisites which are calculated to insure the comfort, and promote the recovery of sick.

The medical staff for Haslar is upon a scale unknown in hospitals of the line. It consists of an inspector-general of hospitals, two deputy inspector-generals, one surgeon, and four permanent assistant-surgeons, with such other assistant-surgeons as may be requisite for the wants of the establishment.

Return showing the Number of Sick which each of the Government Hospitals at Chatham is calculated to accommodate.

Naval hospital	200
Ordnance hospital	200
Fort Pitt general hospital	252
Spur Battery hospital	64
Fort Clarence lunatic asylum, about	84

Obs.—The sick for the naval hospital are derived from the royal marines, and from the seamen of the navy stationed at Chatham and Sheerness.

The strength of the latter is very variable, that of the marines runs from 500 to 1,000 men.

The Ordnance Department has to provide for the sick of about 200 men, and for those three rooms are appropriated in the ordnance hospital. The strength of the line now that the new arrangement has been completed, will, it is calculated, be generally close upon 5,000 men, exclusive of invalids; and, though the strength will diminish during the period embarkations are going on, yet no great reduction of sick will be the consequence, as recruits are daily joining, and they generally furnish a higher proportion of sick than is afforded by bodies of men accustomed to the service.

The number of invalids here on some occasions amount to between 600 and 700, and, considering that a great majority of them are diseased and infirm men, it is easily to be understood that ample hospital accommodation is required for their wants.

Return showing the Number of Sick of the Line under Medical Treatment at Chatham on the 12th June 1843.

In Fort Pitt general hospital . .	235
The Ordnance hospital . .	179
The Spur Battery hospital . . .	52
Fort Clarence lunatic asylum . .	61
Total	527

(Signed) Andrew Smith, M.D.
Principal Medical Officer.

Fort Pitt, June 12, 1843.

No. 2.

Dr. A. Smith to Sir James McGrigor.

Principal Medical Officer's Office, Fort Pitt,
Sir, January 11, 1844.

I have the honour to transmit to you herewith a copy of a letter I forwarded for the information of the commandant, agreeably to his order.

I have, &c.

(Signed) Andrew Smith, M.D.,
Principal Medical Officer.

Sir James McGrigor, Bart.,
Director-General, Army Medical Department.

Enclosure.

Dr. Smith to Captain Anderson.

Fort Pitt, Chatham,
Sir, January 7, 1844.

I have the honour to acknowledge the receipt of your letter of December 27, 1843, requiring, for the information of the commandant, "an explanation of the last paragraph of my letter" of the 18th of the same month.

As regards that paragraph, I have the honour to state, that the reasons which suggested the observations contained in it are numerous; but as a detail of all would extend this communication far beyond the limits of a letter, I shall satisfy myself simply by instancing on the present occasion, those which I consider the principal and most obvious defects of the invaliding establishment.

The most important, then, are—

1st. The want of sufficient hospital accommodation to admit every case of real or reported disability being immediately on arrival here put into a position to be tested, and either verified, or, on the contrary, found fictitious.

2nd. The total deficiency of means of insuring exercise in a healthy position to the sick, recovering from real and serious disease.

The non-existence of the means of separating the really disabled soldiers from others not proved to be so; and,

Lastly, The absence of many of the most important conveniences necessary to enable the carrying out the successive steps requisite to be taken in proving the existence or non-existence of disabilities.

With reference to the first, perhaps the most important defect, I may observe, that I have for years past been satisfied that the utmost possible good to the public is only to be insured by submitting every case, in which a disability is not very manifest, to such a scrutiny as can only be insured from a longer or shorter period of observation in the general hospital; and from having entertained this view, I was led, on being appointed principal medical officer of the establishment, to try, so far as the limited means at my disposal would permit, the plan which I had regarded as alone calculated to guard against the public being burthened with the payment of pensions to men not in reality disabled.

For the last three years that plan has been rigidly observed, and the results have been most satisfactory, nay, superior to what my expectations, though sanguine, led me to expect.

In 1841 I succeeded in restoring to the service, by the aid of able and zealous medical officers, for the direction of the treatment of disease, 481 men; in 1842, 716; and in 1843, 859.

Now, with such unquestionable proofs of improvement over past years, and which will be best seen on a reference to a return No. 1 (hereto appended), I think it unnecessary to say more, than that the advantages which have resulted were not so speedily insured as they ought to have been, and hence the country was put to an expense which would not have been required had there been always here sufficient hospital accommodation to have permitted of every case, whether of real or only alleged disease, having been taken under observation as it presented itself, instead of only as there became vacancies in the hospital from the discharge of individuals who were in it, when the wants of others were discovered.

The present hospital accommodation is little beyond what is necessary to meet the wants of cases of real and serious disease; hence, had many others, of a less important nature, not been disposed, so far as it was possible, in rooms in the barracks, I should not, during the past summer especially, have been able to have tested sufficiently more than half of the men who have been actually restored during the past year to the service; therefore, would probably have been necessitated to find that proportion unfit for further service, and have thus increased very greatly the number of the non-effective list. The rooms which were appropriated to afford temporary hospital accommodation (though they cannot be pronounced to have been very well suited for the purpose) were, nevertheless, very useful, and if there had been a possibility of keeping the sick which were placed in them apart from the other inmates of the barracks, I have no doubt but that even greater advantages would have resulted.

The second defect is one which militates greatly against success in the treatment and cure of disease. The patients in the general hospital, usually about 250 in number, are either congregated in the wards, or to be seen endeavouring to enjoy the air in two small areas behind the hospital, neither of which is more than 58 feet in length, and forty in breadth; in each of which is situated a large privy, from which the most offensive effluvia always proceed, and which so contaminates the air, as to render it anything but conducive to the invigoration of those who are able to seek improvement from exercise out of doors. A medical man must have benefitted little by experience, who does not know that disease is often overcome by the help of pure air and exercise alone, when other remedies have failed; hence, I should say, if every exertion is to be made with a hope of diminishing the number of the non-effective of the army, an airing ground, and proper conveniences for the use of the convalescents, ought most certainly to exist in the establishment.

Attempts have been made, though not by myself, to furnish these requisites, by permitting the convalescents to wander over the interior of the fort, but these have never been continued for any length of time, from its having been found that evils always result from the difficulty of preventing intercourse between the convalescents and the soldiers who were quartered in the barracks. I mention this to show that the medical authorities, even before my time, were not insensible of the defect in question, and not a little anxious to remove it.

So long as barracks filled with soldiers, and an hospital filled with sick, shall exist in the small space included within the walls of Fort Pitt, I see no way of rendering the interior of the latter available for the wants of men convalescing from disease; but, on the other hand, if the men who did not require hospital treatment could be quartered elsewhere, the deficiency in question might be supplied, and an opportunity be afforded of permitting such of the sick as were not bedridden to breathe (what they cannot at present do) a pure air, and escape from the noxious and disgusting effluvia of privies, urinals, &c.

The third defect is productive of great moral difficulty, as, from its existence, the efforts of the ill-disposed constantly gain strength, from results which are hourly being made known amongst them. Individuals who have not had the experience here which I have had, may view the defect in question as one of little importance ; I doubt not, however, but that they would see the evil instanced as distinctly as I do, were they to become aware, as I have, that every step of the invaliding process is commented upon by those who have undergone it, and that hints are taken by many who wish to escape from the service, which often conduce to render their cases more obscure than they would otherwise be.

The many ways in which that evil operates, I shall not attempt to particularize, but shall simply claim for myself the privilege of maintaining that such an evil does in reality exist, and that I am not likely to have come to such a conclusion on trifling grounds, especially considering that I have for nearly thirty years been accustomed to observe the working of human nature as manifested in soldiers.

The last of the more prominent defects, and which consists in the want of many of most important conveniences necessary to enable the invaliding process to be carried out efficiently, might be made to embrace very many deficiencies, but I shall simply mention the most prominent, viz., the want of a room, apart from the hospital, in which to examine soldiers proposed as invalids ; and, secondly, the want of sufficient light in the ward which is at present appropriated as the inspection room.

For nine months in each year, the passages of the lower floor of the hospital hospital are almost daily crowded with men marched from barracks to be examined by the principal medical officer, and, owing to this condition of things, an objectionable intercourse takes place between men from the barracks and patients in the hospital, which no human effort has hitherto been able to prevent. But this evil, though great, is not the only one which results from the practice: the quiet so requisite for an hospital is of necessity unknown in Fort Pitt, and the movements and operations of the servants and others of the establishment are often so impeded as to cause inconvenience, nay injury, I may safely say, to the service.

The room in which the inspections are carried on is the one in which the ward-masters are expected to make up their returns of diets, and in which the fresh cases of sick reported ought to be examined before being taken into hospital. To these very necessary purposes, however, it is not available during the greater portion of each year, hence both of the duties specified are performed in a ward generally filled with sick, and from that circumstance a very unsuitable and improper place. The employment of this room for the inspection of invalids is otherwise objectionable, it is not lighted so as to admit of intricate disease, particularly of the eyes, being distinguishable ; hence it is often found necessary, in examining men proposed to be invalided, or recruits objected to, and submitted for the decision of a medical board, to seek a favourable light, by trying for it in different parts of the room, and when, as often happens, it is not to be insured within walls, it becomes necessary to proceed with the person under examination into the open air, to secure that which certainly ought to exist in an apartment which is resorted to in the making of such important investigations.

As the commandant requires of me to state how I would propose to remedy the defects particularized, I would suggest:—

1st. That Fort Pitt be converted into purely an hospital establishment, and that all the buildings in it, with the exception of those which are required for the accommodation of individuals engaged in the working of the invaliding establishment, ought to be appropriated for the accommodation of sick, and of men whose disabilities require to be verified by further medical observation.

2ndly. That men whose disabilities are manifest, but who do not require hospital treatment, should be quartered in some building remote from Fort Pitt.

3rdly. That all soldiers proposed as invalids should, on arrival at Fort Pitt, be, according to circumstances, either apportioned to the hospital department, or to the barracks elsewhere ; and that those who are placed in the latter should have no admission into Fort Pitt, unless through sickness or other special grounds.

4thly. That an accurate selection of the cases for the two establishments should be made by the principal medical officer, instead of the orderly officer as hitherto, and that the former should examine each party arriving, and fix the localities in which each individual is to be lodged.

5thly. The gate of the fort should be shut against visitors, excepting such as on business, or for other purposes, wish to see the residents belonging to the establishment.

6thly. The whole of the space within the walls in rear of the hospital should be appropriated, as exercise and recreation ground for such of the sick as are in a state of convalescence, and which, if the gate is shut to visitors, may be done without the prospect of any inconvenient results.

7thly. That an inspection room, of a description better adapted for the purposes for which such is required, should be conceded to the establishment.

8thly. That a commission of inquiry, composed partly of military officers, and partly of medical, should be ordered to report the defects more in detail than I have done, with a view that the numerous minor ones especially, which I have not attempted to instance, may be set forth and lead to proper remedies ; and,

Lastly. If the rate of pension allowed by the warrant of November 1829 could, without injury to the country, be made again that to which the young soldier might look, many of the disabilities now professed by this class, which there are strong grounds for believing are often magnified, if not simulated, would cease to exist, and would probably be replaced by a disposition similar to that which is now evidently influencing the old soldier, viz., a desire to serve until the full rate of pension is to be insured.

I have, &c.

(Signed) Andrew Smith, M.D.,
Principal Medical Officer.

APPENDIX XLIV.

Copies of Correspondence on the Subject of a Military Lunatic Asylum.

(*Furnished by order of the Secretary of State for War.*)

Office of Commissioners in Lunacy,
My Lord, 19, Whitehall Place, 27th March, 1857.

As chairman of this board, I have to bring under your Lordship's notice the extract, which is copied on the other side of this sheet, from a report of a visitation made on the 7th instant, by two commissioners, to the Haslar Royal Naval Lunatic Hospital.

You will here find a practical illustration of the hardship of no provision having as yet been made for the care of officers and soldiers of unsound mind, in a military lunatic hospital similar to that of Haslar. I forbear to dwell on the frequent recurrence of cases, brought under the notice of the board, in which the evils arising from the entire absence of all such necessary and humane provision, are more gravely exemplified.

But adverting to the fact that the select committee on the medical department of the army, in their report presented to the House of Commons in July of

last year, recommended "that a new military lunatic "asylum be provided, as embraced in the design of "the new military hospital at Southampton," I beg to inquire of your Lordship whether any steps have been taken, or whether any are now in contemplation, to provide such an asylum?

I have, &c.
(Signed) SHAFTESBURY,
The Lord Panmure. Chairman.

Extract from the Report of Commissioners in Lunacy on Haslar Royal Naval Lunatic Hospital.

"Before concluding our report, we think it right to bring under the special notice of the board the fact, communicated to us by Dr. Stewart, that, within a recent period, as many as eight military officers or soldiers have, under circumstances of great emergency, no provision being made for their care in a military lunatic asylum, been received into Haslar hospital.

"In a case admitted a short time ago,—that of an insane soldier from the Portsea prison,—owing to the ignorance and inexperience of the persons in charge of him, the patient was brought tightly bound, with his hands corded behind him in a cruel manner."

MY LORD, War Office, 26th May 1857.

I HAVE the honour to acknowledge the receipt of your Lordship's letter of the 27th March last, in which you forward an extract from a report of a visitation made by two of the commissioners in lunacy to the Haslar Royal Naval Lunatic Asylum, and in which you urge that provision should be made for the care of officers and soldiers of unsound mind in a military lunatic asylum similar to that at Haslar, and to inform your Lordship that, after giving this important subject the fullest consideration, I am of opinion that it would not be conducive either to the interests of the public, or to those of the patients themselves, to have a special asylum for the permanent care and maintenance of military lunatics, but that it is preferable to continue the present system, whereby after temporary treatment and observation in a lunatic ward or building attached to a general military hospital, the insane soldier is either discharged to the care of his friends or his parish, or is transferred to the private lunatic asylum at Bow, where numerous military lunatics are now maintained, and of which the most satisfactory reports have been from time to time received by me from the military medical officer, by whom the asylum is periodically inspected.

With a view to the proper care and treatment of the military lunatics prior to their discharge from the army, I have given the necessary instruction for the provision, in addition to the new lunatic house recently completed at Chatham, of a ward or wards in the Royal Victoria Hospital now in course of erection, to be fitted up with every requisite for the most effective treatment of such cases of insanity as may occur in the ranks of the army, as I am fully aware of the advantages to be derived from the skilful and efficient treatment of this disease in its earliest stages, at the same time that I am strongly opposed to the principle of founding a permanent asylum at the cost of the public, for this or any other especial class of military invalids.

I have, &c.
(Signed) PANMURE.
The Earl of Shaftesbury,
Chairman of the Board of
Commissioners in Lunacy.

APPENDIX XLV.

(*Given in by Dr. Connolly.*)

1. TABLE showing ADMISSIONS and DISCHARGES of OFFICERS from the LUNATIC DEPARTMENT, HASLAR HOSPITAL, for Ten Years, between the 1st of January 1847 and 31st December 1856.

	No.		No.	Remarks.
Remaining in asylum on 1st Jan. 1847	34			
Admitted during - - 1847	10	Discharged during the year 1847	4	Proportion of cures to admissions on the average of 10 years: 47 per cent.
Do. „ - - 1848	2	Do. „ 1848	3	
Do. „ - - 1849	4	Do. „ 1849	2	
Do. „ - - 1850	9	Do. „ 1850	1	
Do. „ - - 1851	6	Do. „ 1851	4	
Do. „ - - 1852	6	Do. „ 1852	4	
Do. „ - - 1853	8	Do. „ 1853	5	
Do. „ - - 1854	8	Do. „ 1854	5	
Do. „ - - 1855	10	Do. „ 1855	7	
Do. „ - - 1856	13	Do. „ 1856	8	
Total - - -	110	Total discharged -	43	
Deduct remaining in asylum 1st January 1857 - - -	29	Deduct discharged not cured -	5	
	81	Total discharged cured - -	38	

(Signed) ALEXANDER STUART,
Staff Surgeon.

2. Table showing Admissions and Discharges of Seamen and Marines from the Lunatic Department, Haslar Hospital, for Ten Years, between the 1st of January 1847 and 31st December 1856.

	No.		No.	Remarks.
Remaining in asylum on 1st Jan. 1847	105			
Admitted during - - 1847	25	Discharged during the year 1847	16	Proportion of cures to admissions on the average of the 10 years 47$\frac{4}{10}$ per cent.
Do. „ - - 1848	25	Do. „ 1848	10	
Do. „ - - 1849	22	Do. „ 1849	11	
Do. „ - - 1850	18	Do. „ 1850	7	
Do. „ - - 1851	16	Do. „ 1851	7	
Do. „ - - 1852	17	Do. „ 1852	8	
Do. „ - - 1853	21	Do. „ 1853	12	
Do. „ - - 1854	34	Do. „ 1854	14	
Do. „ - - 1855	53	Do. „ 1855	27	
Do. „ - - 1856	52	Do. „ 1856	32	
Total - - -	388	Total discharged -	144	
Deduct remaining in asylum on 1st January 1857 - - -	100	Deduct discharged not cured -	8	
	288	Total discharged cured - -	136	

(Signed) Alexander Stuart,
Staff Surgeon.

APPENDIX XLVI.

(*Given in by Dr. Connolly.*)

Lunatic Asylums.—Proportion of Cures to Admissions.

	Per cent.
In the Metropolitan licensed houses, up to 1843 - - - - - -	only - 25·65
In numerous asylums, Foreign and English :—	
Eleven Dutch asylums - -	The mean 39·74
About 35 English asylums -	
Seven Scotch asylums - -	
Ten Irish asylums - - -	
Five American asylums -	
One French private asylum -	
One German* - - -	
In the York Retreat - - - -	49·24
In Bethlem hospital, all cases admitted being recent, and epilepties and paralyties excluded :—	
Average of cures per cent. on admissions for 100 years ending 1855 - - -	43·05
Average for ten years from 1846 to 1855	54·19
Haslar - { officers -	47 per cent.
Haslar - { men -	47·$\frac{4}{10}$ per cent.

* Table by Dr. Hood, in statistics published by order of the Governors of Bethlem, 1855.

APPENDIX XLVII.

(*Furnished by Order of the Secretary of State for War.*)

General Abstract of Service of Patients admitted into the Lunatic Ward or Receiving House, Chatham, from September 185.

Years of Service.	No. of Patients.	Remarks.	Years of Service.	No. of Patients.	Remarks.
1 year or under	106		15 „ „	13	
2 years „	64		16 „ „	12	
3 „ „	19		17 „ „	8	
4 „ „	21		18 „ „	6	
5 „ „	15		19 „ „	2	
6 „ „	11		20 „ „	1	
7 „ „	10		22 „ „	2	
8 „ „	25		23 „ „	2	
9 „ „	22		24 „ „	1	
10 „ „	13		27 „ „	1	
11 „ „	10		32 „ „	1	
12 „ „	12		Not stated -	28	
13 „ „	16				
14 „ „	9		Total - -	430	

APPENDIX XLVIII.

CORRESPONDENCE relative to the TRANSPORT of SICK and WOUNDED from the Crimea to England.

(Given in by Dr. Smith.)

EXTRACT from a LETTER, addressed by Dr. SMITH to the MILITARY SECRETARY, dated Army and Ordnance Medical Department, 11th May 1854.

"These arrangements, to prove equal to the object in view, will involve a liberal supply of ships, some to convey periodically to England men never likely to become available for further service, and also such as are not likely to do so within a reasonable time; others for use in harbours, or for the transport of sick in the event of hospitals being established at a distance from the station of the army, and in a situation that will admit of the sick being conveyed to them by water.

"The ships for the first-mentioned purpose should be commodious steamers, (high between decks, with ample means of ventilation, and fitted with fixed berths) and one should sail whenever the accumulation of sufferers of the description specified should warrant its departure. On ships being supplied, the most important item of the arrangements will have been effected. The other items, which will consist of matters of detail, will require to be provided by the local authorities at the places of embarkation."

(Copy.)

(Immediate.)

Army and Ordnance Medical Department,

SIR, 27th February 1855.

As the season of the year is now approaching when sick and wounded may be transferred to England without risk of serious suffering from inclement or severe weather, on approaching the Channel or landing at its ports, I am of opinion that the time has arrived for considering whether it would not be desirable to remove to this country direct from the Crimea, cases of that nature which might safely be subjected to a long voyage. Of the advantage of such a measure we have ample experience in the good effects attending removals of this kind from the East and West Indies, where cases of dysentery and diarrhœa stationary, or disposed to deteriorate as long as the sufferers remain in the country where they have been contracted, derive so much benefit from the sea voyage that the soldier who embarked in these climates a broken-down invalid frequently lands here in comparatively re-established health.

But as it will not be possible to foresee what will be the effect of a prolonged sea voyage in cases of other diseases or wounds, I submit, should the suggestions I now propose be entertained and acted on, that arrangements be made that each vessel conveying sick soldiers should touch at certain intermediate ports, viz., Malta and Gibraltar, in order, should any of the cases on board have become aggravated so as to render their landing desirable, that an opportunity may be thus afforded for effecting this.

Ordinary vessels, it is needless to say, will not be applicable for the removal of the sick to whom I refer, but the conveyances for this purpose must be of the description recommended in my letter of the 11th May 1854, namely, steamers with appropriate fittings.

If it be found expedient to adopt the proceeding of the kind above proposed, I have no doubt but that great benefit will result from it to the sufferers, and another very obvious advantage will be, the facilities which this arrangement will afford for relieving the overcrowded state of the hospitals at Scutari, and in the Crimea.

I have, &c.

Col. Mundy, &c. (Signed) A. SMITH,
War Department. Director-General.

Army and Ordnance Medical Department,

SIR, March 16, 1855.

I HAD the honour of addressing you on the 27th February, on the subject of the removal of sick and wounded from the Crimea, and from the hospitals of the East to this country, by direct conveyance, without their treatment and detention at intermediate ports, except in individual cases where, owing to special circumstanees, the continuous prosecution of the voyage might be deemed undesirable.

A medical board composed of the officers named in the margin, all of whom have served at the seat of war, having been lately assembled by my directions to consider certain points in connection with the hospital establishments of the East, and to offer what suggestions or recommendations their local knowledge and experience might enable them to supply, I beg to annex, for the information of Lord Panmure, an extract from the proceedings of this body, strongly confirmatory of the views, I felt it my duty to put forth in the communieation to which reference has been made.

Dy. Insps. General.
Dr. Drumbeck.
Dr. Forrest
Mr. Menzies.
Staff-Surgeon 2nd Class.
H. Mapleton.

I have, &c.

Col. Mundy, &e. (Signed) A. SMITH,
War Department. Direetor-General.

EXTRACT from the RECOMMENDATIONS of a BOARD of MEDICAL OFFICERS assembled at 13, St. James's Place, 8th March 1855.

"3rd. Evacuation of all the hospital establishments to the largest practicable extent.

"4th. To carry out the last recommendation, the removal of the sick and wounded to England would seem most desirable, for reasons too obvious to dwell on; but the beneficial effects of the voyage, the escape from the crowded and polluted hospital, and, in short, the best remedy for nostalgia, a deeply-rooted and widely-spread disease among our enfeebled sick in the hospitals in Turkey, are strong arguments in favour of this measure."

(Immediate.) Copy.

Army and Ordnance Medical Department,

SIR, June 16, 1855. $\frac{15440}{16\ F}$

I HAVE the honour to acknowledge the receipt of your letter of the 9th instant, enclosing a communication to Lord Panmure of the 21st ultimo, from Lord Wm. Paulet, the commandant at Scutari. I beg, in reference to the matter contained in these documents, earnestly to renew for the consideration of the Minister for War my recommendation that every practicable effort should be made to remove to this country from Scutari all sick not likely to recover soon in the hospitals in which they are being treated.

Cases of cholera are from time to time occurring in these establishments, and should this disease assume an epidemic form, the loss of life will doubtless be very great, from the opportunities it will have of working its ravages on men reduced by previous disease.

A few large transports, if they could at once be made available, would nearly empty the hospitals in the neighbourhood of Constantinople, and the benefit which would accrue to the sick by their removal from these localities at this time would be very great indeed. I believe that many of them, if embarked for England, would even before they reached a port in this country, attain a state of improved health far superior to that which many months hospital treatment in

Turkey would bring about. Further, it is to be hoped that the hospital ships, the "Tasmania" and the "Soldanha," will be appropriated to convey sick and wounded from Balaklava direct to England, and that neither of these vessels will have occasion to deposit any of the men embarked in the Crimea, either at Scutari, Kulalie, or Abydos.

I have, &c.

Col. Mundy, &c. (Signed) A. Smith.
War Department.

APPENDIX XLIX.

(Given in by Sir J. Hall, K.C.B.)

Memorandum concerning Ambulance Conveyance.

Equipment of a Regiment, Brigade, and Division on Service in the Field.

On the 3rd of August 1854, I submitted to Lord Raglan a detailed statement of what I considered would be necessary for an army of the strength then about to take the field.

This has been printed, which renders it unnecessary to detail the particulars here; but it consisted of 42 waggons and carts, 336 canvas bearers, and 672 men for their use.

On the 2nd of March 1855, I forwarded the following estimate of the probable number of animals that would be required for the ambulance service of the medical department of the army at that time serving in the Crimea:

For one brigade of three regiments, of, say 850 men each = 2,550, there will be required for the conveyance of the surgeons' field panniers:

3 bât animals	3	mules.
For 8 chairs and 4 litters for each regiment	36	„
For long car and cart for each regiment	12	„
For the conveyance of the field panniers of the staff surgeon of the brigade	1	„
For one brigade	52	„
Total for a division of two brigades,	104	regimental.
For divisional reserve store waggons for the conveyance of purveyor's stores, and medical comforts	6	
Ditto do. of apothecary's stores, and surgical equipment	6	
Two light spring waggons, to carry four men in a recumbent position, 2 mules each	4	
Total for a division of 5,100 men	120	
There are five divisions of infantry, which on this calculation would require	600	mules
There would be required for the cavalry division	136	
For the artillery	136	
Total for divisions	872	mules
For the conveyance of the reserve stores—		
Ten waggons with six mules in each	60	
Two reserve spring waggons	8	
Total for whole army	940	

There should be a certain number of spare mules to replace any that get sick, or in any other way become non-effective, and I think the estimate for the medical department cannot be made under 1,000 animals.

J. Hall,
Inspector-General of Hospitals.

At a subsequent period this scale was extended to meet the increased strength of the army, and the following scheme was drawn up by me for field service:—

Regimental.

The equipment for a regiment should consist of one long car, drawn by two mules, with a driver mounted, which would convey six men sitting and one reclining, with their packs and arms, and all the spare medicines and surgical materials in the drawers of the well, besides four canvas bearers.

One cart, with two mules, to convey the hospital marquee; two bell tents; medical comforts; A and B canteens; fracture box, and spare mule chairs and litters, two pairs of each; a mule with a packsaddle, for the surgeon's medicine panniers, to which either chairs or litters could be attached in place of the panniers in case of necessity; a packsaddle of the same kind, and mule, for the waterskins; one mule with packsaddle and pair of litters, and another with a packsaddle and pair of chairs, making a total of one long car for sick or wounded; one car for the conveyance of stores, and eight mules, which, on an emergency, would remove 19 sick or wounded, or convey on the line of march 11 sick or wounded, the surgeon's panniers, 15 cwt. of stores and equipment, and a pair of water-bags.

There would be required for the conveyance of the divisional stores:—

Two covered waggons, similar to what are called bread waggons, for the conveyance of medicines.

Two of the same kind of waggons for medical comforts; both sets to be secured with good strong padlocks.

Divisional.

Four store waggons for divisional hospital stores and equipment, which would make the full equipment for a division of 10,000 men, taking the field, to consist of:—

Mules.			Conveyance for sick or wounded
13	To carry 13 pairs of surgeons' panniers, with packsaddles complete.		
13	To carry 13 pairs of water-skins.		
26	For 13 Irish cars to accompany regiments, to carry six men each, wounded or sick	78	
26	For 13 regimental store carts.		
48	For 12 waggons, with India-rubber springs, Fuller's improved, to carry eight sick or wounded men each	96	
13	For 13 Maltese carts, fitted with two spring cots in each	26	
100	For 100 pairs of mule chairs		200
50	For 50 pairs of mule litters		100
32	For 8 divisional store waggons.		
321	Mules.		500

The *personnel* of the ambulance, I think, ought to be placed under the command of the director-general of the military train. Each regiment and division on

service should have a fixed amount of ambulance conveyance at all times attached to it. The regimental to be at the disposal of the surgeon, the divisional at that of the principal medical officer of the division, and the whole to be at the disposal of the principal medical officer of the army, should occasion require it. But from my observation and experience, the care of the animals, and the discipline of the men attached to them, should be under the orders of the director general of the field train.

Brigade.

If a brigade were detached, one of the divisional covered store waggons for medicines and medical comforts, and a waggon for other stores, would be required to accompany it, in addition to the regimental equipment of individual regiments.

The medical equipment of a regiment in front of the enemy should consist of—

One hospital marquee, weight	lbs. 400	To be conveyed in store cart.
Two bell tents - - -	140	
Twenty cork mattresses -	100	
Twenty blankets - -	80	
20 rugs - - -	80	
20 waterproof blankets -	85	
A. and B. canteens - -	160	
Box of fracture apparatus -	35	
One spade, one pickaxe, one handsaw, one axe, and two water buckets -	32	
Six canvas bearers - -	84	
Medical comforts, as detailed in list - -	180	
Spare packsaddles and litters - - - -	108	
	1,484	

Detail of Medical Comforts for a Regiment to take with it into the Field, the Commissariat furnishing the ordinary Ration of Bread and Meat, &c.:

8 bottles of brandy. 12 ditto of wine.	Packed in a box with divisions, secured with a lock, and conveyed in the store cart.
5 lbs. of tea. 10 lbs. of arrow-root. 12 lbs. of rice or barley. 14 lbs. of sugar.	Packed in canisters with hinged tops, and fitted into a canteen.
50 ¼ pints of essence of beef. 24 tins of cocoa and milk. 4 lbs. of desiccated milk. 7 lbs. of salt in a stone jar. 1 lb. of ground pepper in a bottle. 8 oz. of mustard in a bottle. 12 lbs. of dried and compressed vegetables. 10 lbs. of candles.	To be packed in a box and conveyed in the store cart.

One lamp, with reflector, fitted in its own case and carried in store cart.

Knife for opening tins of preserved meat or essence of beef, &c.

Estimated weight to be conveyed in the Irish car :—

4 canvas bearers - - - -	56 lbs.
7 knapsacks complete - - -	392
7 men - - - - - -	980
Articles packed in drawers of the well of the car - - - - -	56
	1,484 lbs.

In addition to the regimental equipment, there should be a reserve divisional establishment, capable of receiving 100 patients, which would require an equipment of—

5 hospital marquees,
3 bell tents,
100 cork mattresses,
100 blankets,
100 rugs,
100 waterproof shirts,
100 night caps,

1 coloured signal lantern, 5 ward lamps with burners for double wicks, 6 lbs. of cotton wick, can of oil, and feeder for trimming lamps; 1 hand lamp, 1 lamp with reflector for operations at night, 2 punched lanterns, 2 candlesticks with snuffers chained, 100 tin plates, 112 pint tin cups, 100 knives and forks, common; 6 carvers, 100 iron spoons, 2 flanders kettles, 2 nests of saucepans, tin, 8, 6, 4, 3, 1 quarts, and 1 of 3-pints; 2 tin tea kettles, 4-quarts each; 6 tin meat dishes, 13½ inches; 2 frying pans, 2 flesh forks, 2 soup ladles, 24 chamber pots, 12 bed pans, 12 stool pans with frames for same, 12 urinals, 12 spitting pots, 12 wash-hand basins, 2 axes, 2 meat choppers, 1 handsaw, 24 hand towels, 12 jack towels, 1 folding bath, 18 yards huckaback, 12 yards of flannel, 24 boxes of matches, set of diet scales and weights, 2 claw hammers, one large and one small; 1,000 nails assorted; 4 hasps, staples, and padlocks; 12 bearers for wounded men; 6 water decks, 2 shovels, 2 spades, 2 pickaxes, 6 water buckets, 1 water skin, 1 set of oil measures, 1 ditto for wine.

Medical Comforts.

12 dozen of wine,
6 do. of brandy,
56 lbs. of arrow-root,
56 lbs. of tea,
56 lbs. of candles,
56 lbs. of soap,
56 lbs. of barley or rice,
112 lbs. of sugar,
112 lbs. of preserved potatoes,
112 lbs. of preserved meat, and knife to open tins with.
75 lbs. in ¼-pound tins of essence of beef,
50 tins of cocoa and milk,
20 lbs. of desiccated milk.
56 lbs. of dried and compressed vegetables.
28 lbs. of salt.
5 lbs. of ground pepper.
5 lbs. of ground mustard, weighing 1,611 lbs. in the whole.

The Divisional supply of medicine would be tedious to detail, but the invoice of the divisional medicine waggon, with some few alterations, would answer very well, as it contains all that is necessary, and some articles that are not much used in field hospitals.

JOHN HALL,
Inspector-General of Hospitals.

APPENDIX L.

(Given in by T. Alexander, Esq., C.B.)

TRANSPORT for HOSPITAL FIELD EQUIPMENT, COMFORTS, MATERIALS, MEDICINES, &c.

Each battalion, brigade, and division should be so far complete in themselves that on any sudden march it would be known what amount of transport each would be entitled to, and which ought to be supplied at once to the medical officer of either the battalion, brigade, or division, on his signature. Should it so happen that the medical officer in charge of either the battalion or brigade required more transport than what is laid down, the approving signature of the principal medical officer of the division would be necessary.

Each battalion should have the following transport to enable a certain amount of field hospital equipment and some comforts and medicines to be carried with it, say for 14 days :—

For a battalion 850 strong—

Medical panniers	1 mule.
Cart for hospital equipment, &c.	2 „
Ambulance car to follow in the rear of the battalion for men falling out on the march, and also to carry 14 stretchers, a water barrel, and light operating table (portable)	2 „
	5 mules.

The panniers ought to be larger than those now in use, so that they would be a fair load for a mule. They should be made with trays, not drawers.

Cart to carry—

One hospital marquee	400 lbs.
One bell tent	69 „
20 blankets	80 „
20 waterproof covers	60 „
20 palliasse and bolster cases 20 pairs of sheets or 20 blankets	160 „
4 cork beds	31 „
6 reaping hooks	9 „
Fracture apparatus box	39 „
A. and B. canteens	160 „
Spade, pickaxe, saw, axe, 2 water buckets	32 „
	1,040 lbs.

Also medical comforts, viz.—

Arrowroot	14 „
Tea	5 „
Sugar	10 „
Case, 6 bottles wine 6 bottles brandy (locked)	42 „
Tins, essence of beef	20 „
Candles, sperm or wax	8 „
Pepper	2 „
Mustard	1 „
Salt	5 „
Soap	5 „
Preserved mixed vegetables	5 „
	1,157 lbs.

Total, mules for the above - 5 ; besides carrying 6 or 8 sick.

The surgeon should be held responsible that on moving he has always on hand such a supply as the above, which would enable him at once to provide a hospital establishment for the comfort of the sick ; if not before moving, it would be his duty to make up any deficiencies in the above, and which ought to be obtained from the divisional stores by his own signature.

In the event of requiring more ambulances for his battalion, &c., the approving signature of the divisional principal medical officer would be necessary, and it would be that officer's duty to grant the amount he deemed requisite.

DIVISIONAL SUPPLY for SIX REGIMENTS=5,000 Men.

Each division ought to have, if possible, always at hand (in addition to the regimental supplies), a supply of comforts, materials, and medicines, also of hospital stores, as below enumerated, and transport for the conveyance of the same, viz.—

2 sets medical panniers, one for each brigade	2 mules.
2 large waggons for hospital stores, &c., drawn by four horses or mules, or four carts each drawn by two horses or mules	8 „
2 carts drawn by 2 horses or mules for comforts, materials, medicines, &c.	4 „
Total -	14 mules.

2 large waggons, or four carts, to carry as follows—

2 hospital marquees	800 lbs.
2 bell tents	138
100 blankets	400
100 waterproof covers	300
100 palliasse and bolster cases 100 pairs of sheets or 100 blankets	800
12 reaping hooks	18
16 cork beds	122
12 stretchers	168
2 spades, 2 pickaxes 2 saws, 2 axes, 4 water-buckets	64
Total -	2,810 lbs.

Also, 4 large tea-kettles, 4 large camp kettles, 4 light iron triangles, 100 drinking tins, 100 tin plates, 100 knives and forks, 100 spoons (table), 4 tin meat dishes, 2 carving knives and forks, 2 ladles, 2 flesh forks, 2 meat choppers, 2 meat saws, 4 frying pans, 2 nests saucepans (various sizes), 2 set measures from ¼ pint to 1 quart, 2 sets weights from ¼ ounce to 7 pounds, 2 water-barrels, 2 hammers, 2 corkscrews, 2 knives for opening tins of essence of beef, 48 towels, 8 washhand basins, 4 lanterns, 2 coloured do., 8 candlesticks and snuffers, 4 oil lamps, 2 tin cans of oil, wick 8 pounds, 12 urinals, 12 bed-pans, 16 chamber-pots, 8 close-stool pans and frames, 24 spitting cups, 8 blooding cups, 2 light operating tables (portable).

The two carts drawn by two horses or mules, each to carry say 1,000 lbs. medical comforts, 1,200 lbs. materials, instruments, &c., and from 2 to 300 lbs. of the most requisite medical comforts, viz.—

Essence of beef	100 lbs.
Arrowroot	100
Tea	60
Sugar	60
6 dozen bottles of wine 6 dozen bottles of brandy (locked)	504
Preserved mixed vegetables	50
Candles, sperm or wax	60
Mustard	6
Pepper	6
Salt	20
Soap	40
	1,006 lbs.

The foregoing scales of comforts are estimated on the understanding that the usual rations can be drawn from the Commissariat.

1,200 lbs. of materials, viz. : —

Bandages, tow, lint, splints for upper extremity, for lower do., long straight wooden, pasteboard for splints, gutta percha for do., Luke's fracture apparatus, cradles, stump pillows, air pillows, arm slings, oil silk, oil cloth, gutta percha sheeting, adhesive plaster, isinglass do., ligature thread, needles, sponges, flannel for fomentations, old sheets, shirts, capital instruments, stomach pumps, patent enema syringes, tracheotomy tubes (large size), chain saws, Liston's lion forceps, Liston's bone ditto, Assalini's forceps, cupping instruments, post-mortem cases, counter-scissors, tape pieces, pins, paper.

Also from 2 to 300 lbs. of the most requisite medicines.

A brigade of three regiments, 2,500 men, if detached, would be supplied with one-half the transport and hospital field equipment, materials, comforts, medicines, &c., of the divisional supply above stated, and on other occasions in proportion to the strength, on the above scale.

RECAPITULATION of TRANSPORT requisite for the Conveyance of the above Field Hospital Equipment, Comforts, Materials, Medicines, Instruments, &c., as well as the Number of Sick that can be carried by the same by Battalion, Brigade, and Division.

For a battalion of 850 men.

Medical panniers	1 mule.
Cart for hospital stores, comforts, &c.	2 „
Ambulance car to follow in rear of the battalion, and capable of carrying 6 or 8 sick	2 „
	5 mules.

Brigade of 3 regiments = 2,500, if detached, including regimental transport.

One large waggon for hospital stores, &c. or two carts drawn by two mules each	4 mules.
One cart for comforts and materials	2 „
Medical panniers for brigade medical officer	1 „
Three carts for hospital stores, comforts (one for each regiment)	6 „
Medical panniers (one for each regiment)	3 „
Three ambulance cars (one for each regiment), and capable of carrying 18 or 24 sick	6 „
Total	22 mules,

would carry half of the hospital equipment laid down for the division, with 500 lbs. of comforts, 600 lbs. of materials, and 150 lbs. of the most requisite medicines; also 18 or 24 sick.

Division of 6 regiments = 5,000.

Two large waggons for hospital stores, &c., each drawn by four horses or mules, or four carts, each drawn by two horses or mules	8 mules.
Two carts for comforts, materials, medicines, &c., each drawn by two horses or mules	4 „
Two sets of medical panniers (one for each brigade)	2 „
Six carts for hospital stores, comforts, &c., one for each battalion	12 „
Six ambulance cars (one for each battalion), and capable of carrying 36 or 48 sick	12 „
Six sets of panniers (one for each regiment)	6 „
In addition to the above stores, 36 or 48 sick could be carried by	44 mules.

Ambulances should be forthcoming when requisite in the proportion of 5 per cent. of strength; one-half might be conveyed on wheeled carriages, and the other half in cacolets or litters, viz.—

5 per cent. sick in 5,000 = 250.

16 carts drawn by 2 mules each, 8 sick each	128 sick = 32 mules.
61 pairs of cacolets or litters, 1 mule for 2 sick	122 „ = 61 „

Sick 250, carried by 93 mules.

When stationary were the 44 mules forthcoming for the services of the division, allowing those for the panniers to be employed daily in bringing water, wood, &c., for the hospitals, there would remain 36 mules for the transport of sick, &c.; and they might be employed, when requisite, as follows:—

6 Regimental ambulance cars	= 12 mules = 48 sick.
12 other ambulance cars	= 24 „ = 96 „
	36 mules = 14 sick.

or,—

6 Regimental ambulance cars	= 12 mules = 36 or 48 sick.
20 pairs of cacolets or litters	= 20 „ = 40 or 40 „
2 carts, for knapsacks of men, carried on mules backs, per cacolets	= 4 „ —
	36 mules = 76 or 88 sick,

whether the ambulance cars carried 6 or 8 sick each; also according to the state of the roads.

All cacolets or litters should (as the French) be removable from the pack-saddles, so that on their return to camp, after conveying the sick to the rear, hospital stores, comforts, &c., might be conveyed by the same mules; the cacolets having been placed in carts, or on so many mules.

At head-quarters there should always, if possible, be on hand a supply of medicines, comforts, materials, and hospital field equipment, for about three months, with waggons for the conveyance of the same, should a move take place.

A smaller supply than the above might be sufficient, were there certain and rapid means of replacing head-quarter stores.

Hospital ships for the conveyance of sick, and as receiving ships, would also be necessary; the latter might be used also as store ships for hospital supplies.

Hospital staff corps men would be supplied to act as hospital orderlies, cooks, servants, and bâtmen to medical officers. A dispenser to be in charge of the medicines and materials; and a purveyors' clerk in charge of the hospital stores and comforts, with an hospital staff corps man to each, to assist in issuing.

All packages or boxes for an army in the field should be so arranged that two of either would form a fair load for a pack mule or horse; the above, although apparently very trifling, would be found in practice to be very beneficial, as the boxes or bales could at once be moved by pack mules or horses.

Timely notice of any movement of troops ought invariably to be communicated to the principal medical officer of the army in the field, by the military authorities, so that proper arrangements may be made for the comfort of the sick and wounded.

Officers commanding divisions ought also to inform the principal medical officer of the division of any movements about to take place, that the proper arrangements may be made.

The above is the minimum of transport compatible with efficiency, capable of expansion but not of contraction, and drawn up with reference, not merely to the wants of the medical department, but to facility of transport with an army moving in the field, and to the numerous requirements of other branches of the service, transport for which must be supplied as well as for the medical.

T. ALEXANDER,
Inspector-General of Hospitals.

APPENDIX LI.

RETURN showing the AVERAGE STRENGTH and the DEATHS in each Year from 1839 to 1853 of the Officers, Non-Commissioned Officers, and Men serving in the Army, exclusive of West India and Colonial Corps.

Years.	Cavalry, Guards, and Infantry, exclusive of West India and Colonial Corps.			
	Officers.		Non-commissioned Officers and Men.	
	Establishment.	Total Deaths.	Effectives. Average Strength.	Total Deaths.
1839	5,363	103	98,912	2,914
1840	5,383	85	107,539	3,300
1841	5,389	111	111,134	4,167
1842	5,390	138	115,186	5,052
1843	5,480	101	118,543	5,270
1844	5,492	77	119,334	3,867
1845	5,479	104	118,071	4,587
1846	5,588	118	120,644	5,125
1847	5,566	85	127,245	4,232
1848	5,512	95	127,921	3,213
1849	5,553	94	123,673	4,052
1850	5,546	70	119,111	3,119
1851	5,452	56	116,830	2,729
1852	5,460	74	118,623	3,120
1853	5,440	62	119,271	3,392

Adjutant-General's Office, Horse Guards,
July 6th 1857.

G. A. WETHERALL,
Adjutant-General.

APPENDIX LII.

1.—RETURN showing the AVERAGE STRENGTH and total DEATHS in the Royal Artillery in each Year from 1st April 1839 to 31st March 1854, distinguishing the Horse Artillery from the Battalions.

YEARS.	Average Strength.								Total Deaths.							
	Royal Horse Artillery.				Battalions.				Royal Horse Artillery.				Battalions.			
	Home.		Abroad.		Home.		Abroad.		Home.		Abroad.		Home.		Abroad.	
	Officers.	Men.	Officers.	Men.	Officers.	Men.	Officers.	Men.	Officers.	Men.	Officers.	Men.	Officers.	Men.	Officers.	Men.
1839–40	44	571	2	—	251	3,351	156	2,892	—	6	—	—	2	48	1	65
1840–41	45	569	—	—	237	3,529	160	2,950	—	13	—	—	1	64	—	67
1841–42	44	573	2	—	232	3,340	161	3,026	—	8	—	—	—	51	3	102
1842–43	44	572	2	—	247	3,484	162	3,028	—	9	—	—	1	54	—	90
1843–44	43	568	2	—	238	3,317	160	2,991	—	9	—	—	2	57	4	105
1844–45	44	573	1	—	243	3,366	159	2,755	—	5	—	—	1	65	2	74
1845–46	45	570	—	—	243	3,609	167	2,718	—	5	—	—	1	58	5	58
1846–47	44	568	2	—	270	4,498	157	2,711	—	8	—	—	2	55	3	71
1847–48	44	576	1	—	291	5,905	159	2,942	—	11	—	—	5	91	5	43
1848–49	42	615	2	—	331	6,468	157	3,205	—	5	—	—	1	105	3	83
1849–50	41	615	2	—	343	6,711	169	3,546	—	9	—	—	1	116	—	70
1850–51	41	616	2	—	350	6,754	178	3,570	—	4	—	—	4	84	2	86
1851–52	41	613	2	—	381	6,694	178	3,590	—	9	—	—	5	96	2	76
1852–53	41	749	1	—	368	7,504	177	3,633	—	6	—	—	3	83	5	77
1853–54	43	1,109	1	—	376	9,033	178	3,509	—	13	—	—	2	111	5	157

CHAS. BINGHAM, A.A.G.

2.—RETURN showing the NUMBER of MEN discharged as unfit for Service, from the Royal Artillery during the Fifteen Years, from 1st April 1839 to 31st March 1854, distinguishing the Number under 7 Years, from 7 to 14 Years, from 14 to 21 Years, and above 21 Years' Service.

Years.	Under 7 Years.		7 to 14 Years.		14 to 21 Years.		Above 21 Years.	
	R.H.A.	Battalions.	R.H.A.	Battalions.	R.H.A.	Battalions.	R.H.A.	Battalions.
1839–40	12	47	3	24	4	12	10	35
1840– 1	11	79	1	25	2	27	7	89
1841– 2	12	84	2	31	2	23	7	38
1842– 3	8	66	3	28	5	36	11	96
1843– 4	5	71	5	18	7	36	6	90
1844– 5	10	73	5	26	1	28	21	65
1845– 6	15	68	3	26	10	35	25	68
1846– 7	9	88	3	33	2	50	13	132
1847– 8	13	108	8	27	4	18	7	215
1848– 9	16	107	3	22	5	24	12	218
1849–50	17	116	3	22	4	23	18	177
1850– 1	19	142	2	35	5	8	16	102
1851– 2	13	144	5	30	3	14	6	93
1852– 3	37	129	6	33	7	12	14	93
1853– 4	23	179	7	43	3	24	13	174

CHAS. BINGHAM, A.A.G.

APPENDIX LIII.

1.—Return showing the Average Strength and total Deaths of the Corps of Royal Sappers and Miners, serving at home and abroad, in each Year, from 1st April 1839 to 31st March 1854.

	Years.															Average Strength and Years as for 15 Years.	Total Deaths.
	1839–40.	1840–41.	1841–42.	1842–43.	1843–44.	1844–45.	1845–46.	1846–47.	1847–48.	1848–49.	1849–50.	1850–51.	1851–52.	1852–53.	1853–54.		
At Home.																	
Average Strength	559	638	657	682	638	633	593	747	962	1075	1194	1131	1082	1027	1005	$841\frac{8}{15}$	—
Total Deaths -	7	12	8	12	6	8	6	7	11	14	11	10	14	7	8	$9\frac{6}{15}$	141
Abroad.																	
Average Strength	528	505	583	626	625	636	679	678	682	805	845	899	984	1032	1049	$743\frac{11}{15}$	—
Total Deaths -	15	12	13	5	40	19	10	13	12	14	39	13	15	31	40	$19\frac{6}{15}$	291
Total at Home and Abroad.																	
Strength - -	1087	1143	1240	1308	1263	1269	1272	1425	1644	1880	2039	2030	2066	2059	2054	$1585\frac{4}{15}$	—
Deaths - -	22	24	21	17	46	27	16	20	23	28	50	23	29	38	48	$28\frac{12}{15}$	432

In August and September 1843, 37 men died at Bermuda of fever.
In June 1849, 25 men perished in the wreck of the "Richard Dart," freight ship, while on passage from Woolwich to New Zealand.
In September and October 1853, 25 men died at Bermuda of fever.

2.—Return showing the Number of Men discharged from the Corps of Royal Sappers and Miners, as unfit for Service, in each year, from 1st April 1839 to 31st March 1854.

Years.	Discharged.					
	Under 7 Years Service.	From 7 to 14 Years Service.	From 14 to 21 Years Service.	Above 21 Years Service.	Total.	Remarks.
1839–40 - - -	8	6	4	8	26	—
1840–41 - - -	12	10	4	11	37	—
1841–42 - - -	7	1	2	7	17	—
1842–43 - - -	10	1	4	27	42	—
1843–44 - - -	3	2	5	31	41	—
1844–45 - - -	8	3	13	24	48	—
1845–46 - - -	10	4	13	32	59	—
1846–47 - - -	9	5	6	37	57	—
1847–48 - - -	14	9	4	43	70	—
1848–49 - - -	9	5	5	65	84	—
1849–50 - - -	27	7	4	40	78	—
1850–51 - - -	22	7	2	31	62	—
1851–52 - - -	14	6	1	6	27	—
1852–53 - - -	23	9	—	29	61	—
1853–54 - - -	8	0	8	19	45	—
Total - - -	184	85	75	410	754	—

Chatham, 7th August 1857.

F. E. Cox,
Captain Royal Engineers,
For the A. A. General.

APPENDIX LIV.

1.—A Return of the average Strength of Non-Commissioned Officers and Men of the Royal Marines serving on Shore in the United Kingdom, and Afloat (on all Stations), showing the Deaths among each Portion of the Force in each Year, from 1839 to 1853, both inclusive.

Years.	Serving on Shore.				Deaths on Shore.				Serving Afloat.				Deaths Afloat.			
	Serjeants.	Corporals.	Drummers.	Privates.	Serjeants.	Corporals.	Drummers.	Privates.	Serjeants.	Corporals.	Drummers.	Privates.	Serjeants.	Corporals.	Drummers.	Privates.
1839	253	216	127	1,767	5	2	–	31	215	251	148	5,685	2	2	–	78
1840	253	220	129	1,689	2	4	1	21	217	245	146	5,927	3	9	3	121
1841	267	226	136	1,761	2	2	2	29	217	249	148	6,157	5	3	–	162
1842	278	256	143	3,339	2	2	1	47	209	236	145	5,862	9	6	4	157
1843	312	308	166	3,997	5	–	1	56	181	193	123	4,819	8	8	2	128
1844	332	307	193	4,333	4	2	–	48	166	186	116	4,407	8	1	2	132
1845	317	291	174	3,571	2	2	1	47	194	211	120	5,076	4	4	1	109
1846	309	289	166	3,253	3	5	–	44	213	223	133	5,480	3	2	1	89
1847	320	316	176	3,755	5	4	1	82	224	224	134	5,615	5	5	2	156
1848	375	330	219	4,464	9	1	1	76	225	236	122	5,962	4	4	1	103
1849	426	405	254	5,594	6	9	2	106	190	190	99	5,100	2	5	1	94
1850	402	465	253	3,798	2	1	1	35	198	196	85	5,374	5	2	2	121
1851	376	363	231	3,327	4	2	1	35	198	213	102	5,652	3	4	–	78
1852	395	371	230	3,436	7	1	3	42	193	219	101	5,482	4	4	5	102
1853	367	332	213	3,674	5	2	2	35	222	255	118	6,157	4	3	1	81
Total for 15 years	4,982	4,695	2,810	52,858	63	39	17	734	3062	3,327	2,030	82,755	69	62	25	1,711

J. R. M. Wesley, D.A.G., R.M.

2.—A Return showing the Number of Men discharged from the Royal Marines as unfit for Service, in each Year, from 1839 to 1853 inclusive, with the Periods of Service.

Numbers discharged as unfit, &c.	Years.	Periods of Service.			
		Under 7 years.	From 7 to 14 years.	From 14 to 21 years.	Above 21 years.
165	1839	76	45	37	7
217	1840	83	60	63	11
230	1841	82	68	62	18
209	1842	99	55	39	16
302	1843	139	73	79	11
257	1844	142	48	57	10
314	1845	177	74	52	11
353	1846	216	63	60	14
338	1847	177	76	75	10
304	1848	183	67	45	9
254	1849	132	74	36	12
209	1850	101	68	31	9
225	1851	91	80	50	4
276	1852	141	66	60	9
327	1853	187	92	44	4
Total 3,980	—	2,026	1,009	790	155

Royal Marine Office, 6th August 1857.

J. R. M. Wesley, D.A.G., R.M.

APPENDIX LV.

(*Prepared from the War Office Annual Returns.*)

Table showing the Strength of the Household Brigade and of the Cavalry and Infantry of the Line serving in the United Kingdom, and the Deaths, in each Year from 1st April 1839 to 31st March 1854.

Years.	Household Cavalry.		Cavalry of the Line.		Foot Guards.		Infantry of the Line.	
	Strength on 1st April of each Year.	Died in each Year.	Strength on 1st April of each Year.	Died in each Year.	Strength on 1st April of each Year.	Died in each Year.	Strength on 1st April of each Year.	Died in each Year.
1839	1,214	15	5,267	79	3,234	66	14,417	257
1840	1,206	10	5,330	62	3,246	67	9,377	182
1841	1,219	14	5,308	76	3,180	57	12,278	199
1842	1,212	14	4,660	71	3,227	56	13,584	212
1843	1,205	14	5,335	72	4,879	97	19,945	321
1844	1,199	13	6,225	67	4,996	112	24,845	443
1845	1,207	10	5,864	72	4,931	118	21,946	362
1846	1,203	11	5,483	77	4,915	86	18,679	403
1847	1,211	11	5,827	81	4,777	91	22,389	492
1848	1,206	21	6,204	78	4,932	90	27,156	468
1849	1,213	20	6,523	114	4,987	125	33,745	638
1850	1,209	11	6,525	71	4,958	85	25,695	328
1851	1,208	13	6,177	79	4,950	95	22,570	348
1852	1,209	9	6,241	89	4,942	89	23,534	304
1853	1,193	8	6,160	63	4,951	72	18,249	240
Total for 15 years	18,114	194	87,129	1,161	67,105	1,306	308,409	5,197
Annual ratio per 1,000 of strength		10·7		13·3		19·5		16·8

Note.—To prevent as far as possible the results being affected by the deaths of men returning in bad health from foreign service with their regiments, no corps has been included in this table till it had been at least six months at home, during which period most of that class are likely to have died or been discharged. It has also been found necessary to omit such regiments as had Reserve Battalions serving abroad.

APPENDIX LVI.

(Prepared by the Secretary.)

TABLE showing the GENERAL RESULTS of the five preceding Numbers of Appendix.

—	Officers.		Non-Commissioned Officers and Privates.		
	Strength.	Deaths.	Strength.	Deaths.	Invaliding.
AMONG THE TROOPS GENERALLY.					
Cavalry, Guards, and Infantry.					
Aggregate of 15 years -	82,093	1,373	1,762,037	58,139	—
Annual average - -	5,473	$91\frac{8}{15}$	117,469	3,876	—
Ratio per 1,000 of mean strength - - -	—	16·72	—	32·99	—
Royal Artillery.					
Aggregate of 15 years -	7,549	71	134,286	2,482	4,508
Annual average - -	503	$4\frac{11}{15}$	8,952	$165\frac{7}{15}$	$300\frac{8}{15}$
Ratio per 1,000 of mean strength - - -	—	9·40	—	18·48	33·57
Royal Sappers and Miners.					
Aggregate of 15 years -	—	—	23,779	432	754
Annual average - -	—	—	1,585	$28\frac{13}{15}$	$50\frac{4}{15}$
Ratio per 1,000 of mean strength - - -	—	—	—	18·17	31·71
Royal Marines.					
Aggregate of 15 years -	—	—	156,519	2,720	3,980
Annual average - -	—	—	10,435	$181\frac{5}{15}$	$267\frac{5}{15}$
Ratio per 1,000 of mean strength - - -	—	—	—	17·38	25·42
AMONG THE TROOPS SERVING ABROAD.					
Royal Artillery (Foot).					
Aggregate of 15 years -	2,478	40	47,063	1,224	*
Annual average - -	165	$2\frac{10}{15}$	3,138	$81\frac{9}{15}$	—
Ratio per 1,000 of mean strength - - -	—	16·14	—	26·01	—
Royal Sappers and Miners.					
Aggregate of 15 years -	—	—	11,156	291	*
Annual average - -	—	—	744	$19\frac{6}{15}$	—
Ratio per 1,000 of mean strength.	—	—	—	26·08	—
Royal Marines (Afloat).					
Aggregate of 15 years -	—	—	91,174	1,867	*
Annual average - -	—	—	6,078	$124\frac{7}{15}$	—
Ratio per 1,000 of mean strength - - -	—	—	—	20·48	—

—	Officers.		Non-Commissioned Officers and Privates.		
	Strength.	Deaths.	Strength.	Deaths.	Invaliding.
TROOPS SERVING AT HOME.					
Household Cavalry.					
Aggregate of 15 years -	—	—	18,114	194	589
Annual average - -	—	—	1,208	13	$39\frac{4}{15}$
Ratio per 1,000 of mean strength - - -	—	—	—	10·7	32·5
Cavalry of the Line.					
Aggregate of 15 years -	—	—	87,129	1,161	2,836
Annual average - -	—	—	5,809	$77\frac{7}{15}$	$189\frac{1}{15}$
Ratio per 1,000 of mean strength - - -	—	—	—	13·3	32·5
Royal Horse Artillery.					
Aggregate of 15 years -	646	—	9,457	120	529
Annual average - -	43	—	630	8	$35\frac{1}{15}$
Ratio per 1,000 of mean strength - - -	—	—	—	12·7	56·9
Royal Artillery (Foot).					
Aggregate of 15 years -	4,403	31	77,763	1,138	*
Annual average - -	293	$2\frac{1}{15}$	5,184	$75\frac{13}{15}$	—
Ratio per 1,000 of mean strength - - -	—	—	—	14·6	—
Royal Sappers and Miners.					
Aggregate of 15 years -	—	—	12,623	141	*
Annual average - -	—	—	841	$9\frac{6}{15}$	—
Ratio per 1,000 of mean strength - - -	—	—	—	11·2	—
Foot Guards.					
Aggregate of 15 years -	—	—	67,105	1,306	*
Annual average - -	—	—	4,474	$87\frac{1}{15}$	—
Ratio per 1,000 of mean strength - - -	—	—	—	19·5	—
Infantry of the Line.					
Aggregate of 15 years -	—	—	308,409	5,197	9,859
Annual average - -	—	—	20,560	$346\frac{7}{15}$	$657\frac{4}{15}$
Ratio per 1,000 of mean strength - - -	—	—	—	16·9	32·
Royal Marines (ashore).					
Aggregate of 15 years -	—	—	65,345	853	*
Annual average - -	—	—	4,356	$56\frac{13}{15}$	—
Ratio per 1,000 of mean strength - - -	—	—	—	13·	—

* The invalids from the troops serving abroad and at home cannot be separated.

APPENDIX LVII.

(Compiled from Returns furnished by Dr. Halahan.)

TABLE showing the ADMISSIONS into HOSPITAL and DEATHS among the Men of the Royal Artillery quartered at Woolwich, from 1st April 1837 to 31st March 1857.

Class of Diseases.	1837 to 1847. Aggregate Strength 23,047.		1847 to 1857. Aggregate Strength 43,977.		Total for 20 Years 67,024.		Ratio per 1,000 of Strength.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Fevers - - - -	1,639	16	3,268	37	4,907	53	73	·8
Eruptive Fevers - - -	284	8	1,152	46	1,436	54	21	·8
Diseases of Lungs - - -	3,994	193	6,523	392	10,517	585	157	8·7
Diseases of Liver - - -	240	9	230	8	470	17	7	·2
Diseases of Stomach and Bowels -	697	16	1,650	33	2,353	54	35	·8
Epidemic Cholera - - -	—	—	6	5				
Diseases of Brain - - -	443	29	750	22	1,193	51	18	·8
Dropsies - - - -	132	1	129	18	261	19	4	·3
Rheumatic Affections - - -	1,816	1	2,515	2	4,331		65	
Venereal Affections - - -	9,033	1	21,970	—	31,003		463	
Abscesses and Ulcers - - -	2,353	3	5,412	9	7,765		116	
Wounds and Injuries - - -	2,265	7	3,203	6	5,468	99	81	1·5
Corporal Punishment - - -	107	—	43	—	150		2	
Diseases of Eyes - - -	630	—	892	—	1,522		23	
Diseases of Skin - - -	1,026	—	1,481	—	2,507		37	
Other Diseases - - -	2,749	18	4,726	52	7,475		111	
By Suicide, Accident, Violence, &c.	—	19	—	16	—	35	—	·52
Total - - -	27,408	321	53,950	646	81,358	967	—	—
Ratio per 1,000 -	1,189	13·9	1,226	14·7	—	—	1,213	14·4

APPENDIX LVIII.

(*Prepared by the Secretary.*)

Memorandum on the Extent of Invaliding in the Army as tending to diminish the Rate of Mortality.

The results obtained from returns of the strength and deaths in the army during any given period do not fairly represent the loss arising from military service. They merely show the mortality while the men remain in the army; but many die, after being discharged, of diseases previously contracted, and these deaths, though resulting from service, are not included in the military returns. If all the men discharged as invalids were placed on the pension list the amount of mortality might possibly be ascertained, but some receive no pension, and are lost sight of from the date of leaving the army; others receive temporary or conditional pensions for short periods, and cannot be traced after these have expired. An approximation to the amount may, however, be obtained by ascertaining the deaths among pensioners during the first twelve months after their discharge, and comparing them with the mortality of the regiments from which they had been invalided, when any mortality above the average may be considered attributable to the diseases for which they were discharged. As by this mode of investigation the men are kept under observation for a year after their discharge, while their place in the regiment has been supplied by fresh men, the number pensioned must be added to the strength of the troops before calculating the ratio of mortality from the combined observations. This has accordingly been done in the following summary, showing the mortality among the troops serving at home during the nine years 1845–53, for which period only the returns of the mortality among the pensioners are available :—

Nine Years, 1845-53.	Troops serving in the United Kingdom.			Total placed on Pension List.	Of whom died within 12 months.	Strength of men serving and pensioned.	Of whom died.	Ratio of Deaths per 1,000 of strength.	Increase.
	Aggregate Strength.	Total Deaths.	Rate of Deaths per 1,000.						
Household Cavalry.	10,819	114	10·5	360	45	11,179	159	14·2	3·7
Cavalry of the Line.	55,004	724	13·2	1,757	140	56,761	864	15·2	2·0
Foot Guards.	41,343	851	19·2	1,565	210	45,908	1,061	23·1	3·9
Infantry of the Line.	204,650	3,425	16·7	6,767	536	211,417	3,961	18·7	2·0
Royal Horse Artillery.	6,031	70	11·6	273	12	6,304	82	13·0	1·4

From this it appears that the addition which must be made to the mortality to obtain an accurate estimate of the influence of military service on troops in the United Kingdom varies from 1·4 per 1,000 in the horse artillery to 3·9 per 1,000 in the foot guards. The foot artillery and sappers and miners have been omitted, as there are no means of distinguishing between the men pensioned from companies on foreign service and at home.

It will be observed in the preceding summary that the rate of mortality among the pensioners does not bear any relative proportion to that of the force to which they had previously belonged. Thus it is very nearly the same among those from the household cavalry and the foot guards, though the ratio among the men while serving in the former is the lowest, and in the latter the highest of any class of troops in the United Kingdom; and in like manner the mortality among the pensioners from the cavalry and infantry of the line is the same, although the ratio of the latter while serving is considerably in excess of the former. The higher rates of mortality among the pensioners from the household troops may probably arise partly from their greater facilities of invaliding, and partly from a larger proportion of them, as compared with the line, residing in London after their discharge.

If the same mode of calculation be applied to the army generally, serving both at home and abroad, we ascertain the average annual loss arising from military service to be as follows :—

Nine Years, 1845-53.	Aggregate Strength.	Total Deaths.	Ratio of Deaths per 1,000 of strength.	Total number placed on pension list.	Of whom died within twelve months.	Total strength of men serving and pensioned.	Total deaths among these.	Ratio of deaths per 1,000 of strength.
Cavalry, Guards, and Infantry, exclusive of West India and Colonial Corps - -	1,091,389	33,569	30·7	29,057	2,255	1,120,446	35,824	32·0
Royal Artillery - -	86,600	1,520	17·5	2,214	133	88,814	1,653	18·6
Royal Sappers and miners -	16,469	275	16·7	402	25	16,871	300	17·8

Thus it appears that the total mortality arising from military service amounts to 32 per 1,000 in the army generally, 18·6 per 1,000 in the artillery, and 17·8 per 1,000 in the sappers and miners. The addition to be made on account of the deaths among the pensioners is less than for the troops serving in the United Kingdom. This evidently arises from the circumstance that on foreign service, after having been selected for discharge, a considerable time elapses before the man reaches home, and he is then kept at least a month under observation at Chatham, and if his death occurs during that period it is entered in the regimental returns. In the United Kingdom, on the other hand, the man is at once sent to Chatham for observation, and in the household brigade even that is dispensed with, the invalid being discharged after his case has been verified by the staff surgeon of the district and the physician of Chelsea Hospital. Thus in chronic cases, there is much less chance of the man dying before he is discharged than when he has to be sent home from some distant colony.

But there is another important question besides that of mortality connected with invaliding. To what extent does it operate upon the effective strength of the army? If the term "invaliding" had been applied only to the discharge of such men as were deemed unfit for military service in consequence of disease or physical disability contracted in and by the

service, this could have been easily ascertained. But owing to the peculiar constitution of the British army it has a more extended meaning. Prior to the passing of the Limited Enlistment Act in 1847, all recruits for the army were attested for "unlimited service," or in other words, they engaged to serve for life, or till they were legally discharged. No soldier therefore could demand his discharge as a matter of right after any length of service. A certain number were granted their discharges annually as an indulgence, and on a modified rate of pension, but, except in case of a reduction of the army, the great majority were discharged as invalids, being reported by the medical officers unfit for further service. Although by regulation men could be compelled to remain in the army up to any age, practically very few were retained after 24 years' service in cavalry or 21 in infantry. These periods were probably adopted as being the same which were fixed by Mr. Wyndham's Act in 1806 as entitling a soldier to claim his discharge. To have completed this service the soldier must usually have attained the age of 43 in the one service and 40 in the other, and has probably lost that activity and energy which is so necessary to the efficient discharge of military duty. In forming any estimate of the influence of invaliding upon the effective strength of the army this class should therefore be omitted, as they may be fairly deemed *emeriti*, and to have been discharged rather for length of service than for the disability which, in compliance with the pension regulations, it was necessary to assign as the reason of their discharge.

With regard to the others who may strictly be termed "invalids," it is of importance to ascertain whether they have become disabled at an early period of their career, or after having served for a considerable portion of that period which seems to be deemed a fair length of military service. This is interesting in a financial point of view, as the loss of a young soldier involves a considerable expense to replace him, while at a later period the preliminary expenses of raising and training him are supposed to have been compensated by the service he has performed. It is also interesting as illustrative of the wear and tear of military service. As the number of men discharged after certain periods must vary in a great measure according to the proportion serving at these periods, it has been necessary, with a view to forming an accurate comparison, to ascertain the relative numbers, which has accordingly been done, and will be found in Returns 3 and 4, annexed, from which the table in the next column has been compiled :—

—	Under 7 years' service.	7 to 14 years' service.	14 to 21 in Infantry or 24 in Cavalry.	Total under 21 or 24 years' service.	Above 21 or 24 years' service.
Household Cavalry.					
Strength - -	8,332	4,988	4,188	17,508	606
Invalided - -	52	68	147	267	322
Ratio invalided per 1,000 serving - -	6·2	13·6	35·1	15·2	531·3
Cavalry of the Line.					
Strength - -	48,541	21,721	15,453	85,715	1,414
Invalided - -	713	510	568	1,791	1,045
Ratio invalided per 1,000 serving -	14·7	23·5	36·7	20·9	739·0
Foot Guards.					
Strength - -	36,761	20,731	12,707	70,199	3,521
Invalided - -	526	335	254	1,115	1,167
Ratio invalided per 1,000 serving -	14·3	16·1	20·0	15·9	331·4
Infantry of the Line.					
Strength - -	195,628	70,549	39,097	305,274	3,135
Invalided - -	3,105	1,486	2,174	6,765	3,094
Ratio invalided per 1,000 serving - -	15·9	21·1	55·6	20·8	987·0

It must be recollected in reading the above table, that the figures in the fourth column represent not a body of men consisting of the numbers therein set down, but an aggregate of a small number maintained, though at a decreasing strength, by the retention of the uninvalided men and the annual introduction of recruits, for a period of 21 years in the infantry and 24 in the cavalry, upon which the average annual invaliding would be at the rate of 20·8 per 1,000 for the infantry of the line.

From this table it appears that the numbers annually discharged by invaliding under 21 years' service range from 15·2 per 1,000 in the household cavalry to 20·9 in the cavalry of the line; and including those who have served 21 years and upwards it reaches 32·5 per 1,000 in the cavalry, and 31·9 per 1,000 in the infantry of the line. In the invaliding under 21 and 24 years' service there is the same peculiarity observed as in the mortality among the pensioners, that the ratios correspond very closely in the household cavalry and foot guards, and in the cavalry and infantry of the line; but there is this marked distinction, that the invaliding is in excess in the line, while the mortality preponderated in the household brigade.

1. Return showing the Number of Men discharged to Pension from each Arm of the Service, in each of the Nine Years 1845–1853, and the Number of these Men who died within Twelve Months from the Date of their being placed on the Pension List.

	Household Cavalry.		Cavalry of Line.		Foot Guards.		Infantry of Line.		Horse Artillery.		Foot Artillery.		Sappers, &c.	
	Placed on the Pension List in each year.	Died within 12 months.	Placed on the Pension List in each year.	Died within 12 months.	Placed on the Pension List in each year.	Died within 12 months.	Placed on the Pension List in each year.	Died within 12 months.	Placed on the Pension List in each year.	Died within 12 months.	Placed on the Pension List in each year.	Died within 12 months.	Placed on the Pension List in each year.	Died within 12 months.
1845	35	3	202	24	142	19	2,089	156	30	–	149	9	37	4
1846	50	8	255	21	162	30	2,374	194	37	3	184	12	51	3
1847	51	4	273	18	168	23	3,347	226	28	1	308	16	49	1
1848	30	1	277	20	159	23	3,181	200	24	1	231	10	68	1
1849	32	2	304	20	191	19	2,944	187	28	–	183	11	37	2
1850	49	11	286	18	167	17	2,547	171	27	–	177	18	50	3
1851	38	5	274	17	174	28	2,070	190	35	3	170	16	24	5
1852	40	8	334	13	192	25	3,349	273	24	1	220	10	46	2
1853	35	3	354	17	210	26	2,672	235	40	3	319	19	40	4
	360	45	2,559	168	1,565	210	24,573	1,832	273	12	1,941	121	402	25
Ratio of deaths per 1,000 pensioned.	125·		65·6		134·2		74·5		44·		62·3		62·2	

2.—RETURN showing the Strength of the Household Brigade and Cavalry and Infantry of the Line serving in the United Kingdom, from 1st April 1845 to 31st March 1854, the Number who died in each Year, the Number discharged to Pension, and the Number who died of those so discharged, within Twelve Months from the Date of their being pensioned.

YEARS.	Household Cavalry.				Cavalry of the Line.				Foot Guards.				Infantry of the Line.			
	Strength on 1st April.	Died in each year.	Pensioned in each year.	Died within 12 Months after being placed on pension list	Strength on 1st April.	Died in each year.	Pensioned in each year.	Died within 12 Months after being placed on pension list	Strength on 1st April.	Died in each year.	Pensioned in each year.	Died within 12 Months after being placed on pension list	Strength on 1st April.	Died in each year.	Pensioned in each year.	Died within 12 Months after being placed on pension list
1845	1,207	10	35	3	5,864	72	148	21	4,931	118	142	19	21,946	362	515	49
1846	1,203	11	50	8	5,483	77	148	17	4,915	86	162	30	18,679	403	537	44
1847	1,211	11	51	4	5,827	81	165	16	4,777	91	168	23	21,538	480	912	70
1848	1,206	21	30	1	6,204	78	181	18	4,932	90	159	23	25,424	440	830	52
1849	1,213	20	32	2	6,523	114	220	17	4,987	125	191	19	32,119	592	1,251	53
1850	1,209	11	49	11	6,525	71	236	15	4,958	85	167	17	24,102	312	593	49
1851	1,208	13	38	5	6,177	79	194	15	4,950	95	174	28	21,760	335	611	65
1852	1,209	9	40	8	6,241	89	233	8	4,942	89	192	25	22,675	282	994	93
1853	1,153	8	35	3	6,160	63	232	13	4,951	72	210	26	16,407	219	524	61
Total -	10,819	114	360	45	55,004	724	1,757	140	44,343	851	1,565	210	204,650	3,425	6,767	536
Average	1,202	12·	40	5	6,111	80·4	195	15·5	4,927	94·5	174	23·3	22,739	380·5	752	59·5

3.—RETURN showing the Number of Men serving in the Household Brigade and the Cavalry and Infantry of the Line in the United Kingdom on the 1st of April in each Year from 1839 to 1853 inclusive, classed according to Length of Service.

	Household Cavalry.					Cavalry of the Line.					Foot Guards.					Infantry of the Line.				
	Under 7 years' service.	7 to 14.	14 to 21.	Above 24 years' service.	Total.	Under 7 years' service.	7 to 14.	14 to 24.	Above 24 years' service.	Total.	Under 7 years' service.	7 to 14.	14 to 21.	Above 21 years' service.	Total.	Under 7 years' service.	7 to 14.	14 to 21.	Above 21 years' service.	Total.
1 April 1839	517	328	341	28	1,214	2,545	1,408	1,172	142	5,267	2,378	1,515	850	160	4,903	7,904	4,366	1,919	228	14,417
„ 1840	523	331	306	41	1,206	2,734	1,339	1,107	150	5,330	2,326	1,495	892	181	4,894	5,694	1,874	1,719	90	9,377
„ 1841	547	326	298	48	1,219	2,895	1,252	1,027	134	5,308	2,316	1,331	933	252	4,832	7,323	2,321	2,527	107	12,278
„ 1842	580	291	282	59	1,212	2,672	1,005	900	83	4,660	2,428	1,293	872	280	4,873	9,215	1,865	2,415	89	13,584
„ 1843	580	294	277	54	1,205	3,135	1,091	1,029	80	5,335	2,460	1,308	855	256	4,879	14,146	2,632	2,997	170	19,945
„ 1844	599	292	265	43	1,199	3,847	1,153	1,149	76	6,225	2,535	1,397	806	258	4,996	17,522	3,716	3,399	208	24,845
„ 1845	594	293	279	41	1,207	3,327	1,340	1,122	75	5,864	2,321	1,496	845	269	4,931	14,724	3,714	3,362	146	21,946
„ 1846	585	310	261	47	1,203	2,939	1,371	1,105	68	5,483	2,247	1,484	924	260	4,915	12,592	3,202	2,738	147	18,679
„ 1847	570	317	272	52	1,211	3,232	1,403	1,069	63	5,827	2,301	1,283	902	292	4,777	14,554	4,916	2,475	444	22,389
„ 1848	552	355	257	42	1,206	3,173	1,650	1,015	86	6,204	2,450	1,381	803	298	4,932	16,936	7,099	2,692	429	27,156
„ 1849	536	343	272	32	1,213	3,645	1,825	951	102	6,523	2,546	1,427	728	286	4,987	21,269	8,891	3,254	331	33,745
„ 1850	530	383	270	23	1,209	3,618	1,854	963	90	6,525	2,565	1,408	758	227	4,958	15,564	7,414	2,537	180	25,695
„ 1851	531	374	267	36	1,208	3,381	1,839	874	83	6,177	2,559	1,413	818	160	4,950	12,970	6,983	2,494	123	22,570
„ 1852	510	378	267	24	1,203	3,614	1,559	973	95	6,241	2,635	1,269	860	178	4,942	14,139	6,635	2,515	245	23,534
„ 1853	513	373	274	33	1,193	3,484	1,592	997	87	6,160	2,694	1,232	861	164	4,951	11,076	4,921	2,054	198	18,249
Total -	8,332	4,988	4,188	606	18,114	48,541	21,721	15,453	1,414	87,129	36,761	20,731	12,707	3,521	73,720*	195,628	70,549	39,097	3,135	308,409

* It has been necessary to include in the strength of the foot guards the two battalions serving in Canada in the years 1839–42, as the invalids were sent to, and discharged from the battalions at home, and could not have been separated from the others without much difficulty.

4.—RETURN showing the Number of Men discharged by invaliding from the Household Brigade and from the Cavalry and Infantry of the Line, serving in the United Kingdom, in each Year, from 1st April 1837 to 31st March 1854, at the following Periods of Service:

	Household Cavalry.					Cavalry of the Line.					Foot Guards.					Infantry of the Line.				
	Under 7 years' service.	7 to 14.	14 to 24.	Above 24 years' service.	Total.	Under 7 years' service.	7 to 14.	14 to 24.	Above 24 years.	Total.	Under 7 years' service.	7 to 14.	14 to 21.	Above 21 years.	Total.	Under 7 years' service.	7 to 14.	14 to 21.	Above 21 years.	Total.
1839, 40	2	6	14	20	42	34	25	43	48	150	32	21	30	34	117	71	81	164	112	428
1840—1	1	4	21	17	43	36	44	47	148	275	57	31	29	40	157	124	44	224	77	469
1841—2	–	9	12	24	45	53	24	35	62	174	42	13	13	58	126	102	41	174	74	391
1842—3	–	1	6	26	33	34	17	36	54	141	37	14	21	87	159	99	29	118	61	307
1843—4	4	3	12	31	50	43	18	29	43	133	29	18	13	70	130	221	42	230	153	646
1844—5	4	–	3	19	26	46	35	44	47	172	39	37	8	62	146	290	75	283	194	842
1845—6	5	7	7	21	40	49	31	25	52	157	33	16	16	47	112	218	68	176	150	612
1846—7	8	4	11	24	47	34	27	41	52	154	27	31	26	58	142	126	55	84	189	454
1847—8	2	5	8	28	43	51	35	43	67	196	29	24	12	80	145	185	153	159	472	969
1848—9	6	1	11	18	36	36	35	40	63	174	31	22	17	112	182	234	164	107	439	944
1849, 50	4	4	8	19	35	73	49	35	95	252	31	28	10	117	186	384	186	138	316	1024
1850—1	5	8	10	23	46	63	44	30	89	226	26	17	13	109	165	275	144	77	144	640
1851—2	5	6	12	18	41	57	44	24	67	192	43	28	14	75	160	319	141	76	116	652
1852—3	2	6	8	18	34	52	32	46	78	208	34	12	13	124	183	299	157	74	411	941
1853—4	4	4	4	16	28	52	50	50	80	232	36	23	19	94	172	158	106	90	186	540
Total -	52	68	147	322	589	713	510	568	1045	2836	526	335	254	1167	2282	3105	1486	2174	3094	9859

APPENDIX LIX.

(Furnished by Deputy Inspector-General Taylor, C.B.)

RETURNS showing the NUMBER of INVALIDS discharged at CHATHAM, and the Causes of Invaliding, in each Year from 1839 to 1857.

1.—NUMBER of MEN arrived and disposed of at the Invalid Depôt, Chatham, from the Year 1839 to December 1856.

For the Year ending	Remaining.	Joined.	Dead.	Discharged.	Deserted.	Transferred	Fit for further Service.	Remaining.
31 December 1839	182	2,709	149	1,997	2	4	298	341
„ „ 1840	341	3,289	128	2,529	–	–	761	212
„ „ 1841	212	2,329	144	1,668	4	1	481	243
„ „ 1842	243	2,533	66	1,676	2	3	716	313
„ „ 1843	313	2,612	78	1,512	4	6	859	466
„ „ 1844	466	2,591	84	1,934	1	–	633	405
„ „ 1845	405	2,798	82	2,035	2	1	869	219
„ „ 1846	219	3,081	73	2,052	1	–	695	479
„ „ 1847	479	3,171	87	2,669	–	–	435	459
„ „ 1848	459	3,038	74	2,585	–	1	485	352
„ „ 1849	352	2,209	83	1,850	–	–	418	210
„ „ 1850	210	2,482	78	2,108	–	–	307	199
„ „ 1851	199	1,980	61	1,549	1	–	404	164
„ „ 1852	164	2,861	69	2,295	–	–	396	265
„ „ 1853	265	2,902	70	2,160	1	–	787	149
„ „ 1854	149	2,630	59	1,450	1	–	1,119	150
„ „ 1855	150	7,528	159	3,204	8	10	3,162	1,135
„ „ 1856	1,135	7,172	105	5,237	14	4	1,880	1,067
Quarter ending 31st March 1857	1,067	1,007	19	1,458	–	–	12	585

JAMES POPE,
Lieut. and Adjt.

2.—NUMBER of INVALIDS from Home and each Foreign Station, discharged the Service in each Year from 1st April 1839 to 31st March 1857.

	For the Year ending 31st March																	
	1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.	Total.
Home Cavalry	189	211	140	188	127	188	77	126	84	78	108	102	114	102	140	67	79	450	2,570
Home Infantry	664	1,076	579	726	854	721	716	785	1,156	1,094	804	648	645	919	889	555	509	3,603	16,943
Army in the East	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	52	2,380	1,098	3,530
Bengal	372	255	173	104	125	104	260	316	563	275	126	134	126	144	119	106	145	139	3,586
Madras	176	161	74	110	96	110	142	166	112	160	71	100	75	143	75	44	69	38	1,922
Bombay	91	169	182	86	123	86	244	300	121	93	167	291	190	285	245	106	163	97	3,039
Ceylon	17	70	24	11	18	11	30	34	42	7	11	15	13	25	24	19	30	18	419
Mauritius	2	14	26	7	15	7	14	11	30	3	23	35	24	22	21	13	20	11	298
China	- -	- -	- -	- -	62	11	29	31	28	34	5	- -	9	16	6	6	3	7	247
New South Wales and Van Diemen's Land	42	52	43	49	25	49	42	58	101	50	36	65	45	27	30	21	20	3	758
Cape of Good Hope	20	25	25	48	49	48	43	41	40	259	44	50	12	121	146	42	56	19	1,088
Windward and Leeward Islands	105	74	148	50	46	50	25	30	50	37	43	34	20	33	19	16	25	13	818
Jamaica	51	29	9	2	29	2	25	15	- -	2	11	12	6	8	6	4	10	7	228
Bermuda	11	38	- -	1	3	1	14	9	12	19	41	46	3	- -	17	1	1	20	237
Canada	170	256	171	84	85	84	53	94	106	65	64	126	122	90	37	16	12	25	1,660
Newfoundland	35	- -	18	23	9	23	21	24	15	14	11	15	2	6	4	3	7	2	232
Nova Scotia and New Brunswick	25	39	52	43	30	43	31	62	16	35	39	42	4	29	13	11	- -	3	517
Ionian Islands	53	11	17	11	9	11	2	71	7	25	67	47	30	32	1	29	27	46	496
Malta	97	93	45	23	13	23	2	30	91	76	28	142	23	30	34	62	41	174	1,027
Gibraltar	207	90	13	62	36	62	44	42	69	29	41	126	34	26	29	20	69	126	1,125
St. Helena	10	- -	- -	- -	1	3	4	8	5	3	6	7	3	7	7	5	4	8	81
West Coast Africa	- -	- -	- -	- -	1	- -	- -	1	- -	- -	- -	- -	- -	1	- -	- -	- -	- -	3
Monte Video	- -	- -	- -	- -	- -	- -	- -	4	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	4
Hudson's Bay	- -	- -	- -	- -	- -	- -	- -	- -	1	- -	- -	- -	- -	- -	- -	- -	- -	- -	1
Total	2,337	2,663	1,739	1,628	1,756	1,637	1,818	2,258	2,649	2,358	1,746	2,037	1,500	2,066	1,862	1,198	3,670	5,907	40,829

3.—Number of Invalids from Home and Foreign Stations discharged the Service at Chatham in each Year from 1st April 1835 to 1st April 1857.

—		For the Year ending 31st of March,																	
		1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.	Total.
Cachexy	Home	25	29	9	23	29	21	23	28	62	67	54	51	54	38	57	29	32	245	876
	Foreign	43	32	20	19	17	21	24	26	33	38	37	82	23	50	51	42	41	97	696
Dropsy and Visceral Diseases	Home	6	9	6	17	8	16	5	3	8	7	2	9	12	7	5	16	5	25	166
	Foreign	31	29	14	21	9	24	24	4	16	25	8	17	10	22	10	3	31	10	308
Dysentery and Hepatic Disease	Home	12	5	4	40	37	38	39	20	30	27	8	9	13	19	13	19	16	90	439
	Foreign	37	55	50	44	36	46	78	69	78	62	36	61	40	90	52	19	61	52	966
Eye Diseases	Home	19	28	27	29	36	27	43	30	70	28	82	46	54	31	50	22	38	350	1,060
	Foreign	74	69	70	40	39	42	60	66	104	65	88	148	102	71	55	38	129	131	1,391
Wounds and Fractures	Home	22	17	12	28	52	29	15	24	28	32	21	8	19	12	20	12	29	161	541
	Foreign	72	98	39	27	92	28	73	229	223	92	93	123	48	32	52	56	1,590	736	3,703
Dislocations	Home	10	5	6	—	10	—	4	5	7	6	4	1	1	—	2	1	—	7	69
	Foreign	7	23	9	2	6	2	7	8	5	2	4	—	1	2	1	1	—	2	82
Contractions	Home	8	6	3	30	18	30	5	20	8	8	—	9	17	7	13	9	4	108	303
	Foreign	7	12	12	38	22	40	14	21	23	3	10	26	21	20	15	12	108	31	435
Hernia	Home	29	39	22	30	24	27	30	25	45	45	34	13	16	29	31	11	12	251	713
	Foreign	52	70	43	7	4	10	20	16	14	22	19	33	19	17	17	6	27	34	430
Mental Diseases	Home	9	13	8	9	13	7	7	14	30	23	9	19	10	29	28	27	43	101	399
	Foreign	21	24	18	20	9	22	19	32	32	31	36	52	45	49	40	46	64	69	629
Paralysis	Home	10	12	6	12	15	9	9	9	9	21	9	17	12	11	21	19	10	30	241
	Foreign	21	29	26	23	16	26	15	22	21	33	18	22	13	38	16	20	58	20	437
Epilepsy	Home	20	16	16	17	25	17	17	13	17	13	18	17	17	13	16	18	26	110	466
	Foreign	22	24	26	9	11	9	11	10	13	11	12	29	19	15	16	9	45	33	324
Deafness & Impediment of Speech	Home	9	21	4	18	19	21	8	2	12	13	13	8	10	10	4	1	5	86	264
	Foreign	10	17	13	10	9	7	9	13	11	10	10	14	3	10	11	1	26	16	200
Pulmonic Disease	Home	333	520	310	215	197	210	199	191	347	255	146	125	231	280	324	184	178	848	5,093
	Foreign	425	325	221	159	143	161	254	194	233	170	143	189	124	216	166	111	559	255	4,048
Rheumatism and Chronic pains	Home	67	230	108	162	190	159	174	167	352	355	97	39	105	343	258	118	109	385	3,418
	Foreign	113	192	142	119	100	125	121	162	286	342	39	41	68	239	134	84	209	111	2,627
Ulcers and Varix	Home	88	91	35	76	85	78	55	55	60	62	70	46	42	69	58	17	41	586	1,614
	Foreign	121	97	75	39	77	37	60	37	53	52	31	63	33	40	30	12	46	97	1,000
Strictures and Incontinence of Urine	Home	1	19	16	8	6	9	6	11	8	6	4	2	10	7	12	2	6	69	202
	Foreign	5	31	30	5	7	4	14	6	6	2	2	7	6	8	13	—	13	15	174
Venereal Disease	Home	1	3	4	4	—	3	3	3	10	9	20	29	20	10	6	6	6	78	205
	Foreign	1	5	9	6	6	8	12	6	5	10	20	30	16	30	14	8	14	16	226
Infirmities of Age and worn out	Home	184	224	123	198	217	197	151	291	137	145	331	302	116	106	111	111	28	268	3,240
	Foreign	422	244	203	124	172	127	210	426	243	216	228	350	150	96	140	108	61	95	3,615
Weekly Constitution and upon reduction	Home	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	255	255
	Foreign	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	34	34
Total	Home	853	1,287	719	916	981	898	793	911	1,240	1,172	912	750	759	1,021	1,029	622	588	4,053	19,504
	Foreign	1,484	1,376	1,020	712	775	739	1,025	1,347	1,409	1,186	834	1,287	741	1,045	833	576	3,082	1,854	21,325
Grand Total		2,337	2,663	1,739	1,628	1,756	1,637	1,818	2,258	2,649	2,358	1,746	2,037	1,500	2,066	1,862	1,198	3,670	5,907	40,829

4.—By Classes of Causes of Disability, Proportion per Cent. of total Invalids arrived, discharged the Service during the Sixteen Years ending 31st March 1855, and during the Two Years ending 31st March 1857, inclusive of 2,695 discharged in the latter Period on Reduction for partial Disability.

Per Cent. discharged the Service.	Of Invalids arrived.	
	Sixteen Years to 1st April 1855.	Two Years to 1st April 1857.
By Cachexy and Scrofula	2·44	2·82
„ Thoracic Diseases	16·89	12·51
„ Dysentery, Hepatic Diseases, and Dropsies	3·67	1·97
„ Diseases of the Eye	4·17	4·40
„ Wounds and Injuries	3·99	17·11
„ Subluxations and Dislocations	·34	·06
„ Contractions	1·12	1·70
„ Ruptures	1·89	2·20
„ Mental Diseases	1·73	1·88
„ Paralysis	1·29	·80
„ Epilepsey	1·19	1·45
„ Deafness and Impediment of Speech	·76	·90
„ Rheumatic Ailments	12·10	5·53
„ Ulcers and Varix	4·26	5·23
„ Strictures and Urinary Diseases	·63	·70
„ Venereal Diseases	·73	·77
„ " Worn out," or general infirmity by age and length of service	14·82	3·07
„ Reduction of the army, not desirable to retain on account of weakly constitution	—	1·96
Total	71·82	65·14

(Compiled by the Secretary from the preceding Tables and the War Office Returns.)

RETURN showing the Extent of INVALIDING among the TROOPS of the LINE serving in the different COLONIES and DEPENDENCIES for the Fifteen Years from 1st April 1839 to 31st March 1854.

—	Strength of Troops serving.	Discharged at Chatham as Invalids.
Bengal:		
Aggregate of 15 years	188,407	3,196
Annual average	12,560	$213\frac{1}{15}$
Ratio per 1,000 of mean strength	-	16·9
Madras:		
Aggregate of 15 years	87,486	1,771
Annual average	5,832	$118\frac{1}{15}$
Ratio per 1,000 of mean strength	-	20·2
Bombay:		
Aggregate of 15 years	84,670	2,673
Annual average	5,644	$178\frac{3}{15}$
Ratio per 1,000 of mean strength	-	31·5
Ceylon:		
Aggregate of 15 years	23,102	352
Annual average	1,540	$23\frac{7}{15}$
Ratio per 1,000 of mean strength	-	15·2
Mauritius:		
Aggregate of 12 years (1842–53)	25,946	254
Annual average	1,729	$16\frac{14}{15}$
Ratio per 1,000 of mean strength	-	9·7
China:		
Aggregate of 15 years	9,207	247
Annual average	767	$20\frac{7}{12}$
Ratio per 1,000 of mean strength	-	26·8
New South Wales, Van Diemen's Land, and New Zealand:		
Aggregate of 15 years	28,728	714
Annual average	2,329	$47\frac{9}{15}$
Ratio per 1,000 of mean strength	-	24·8
Cape of Good Hope:		
Aggregate of 15 years	61,642	971
Annual average	4,109	$64\frac{11}{15}$
Ratio per 1,000 of mean strength	-	15·7
Windward and Leeward Colonies:		
Aggregate of 15 years	46,538	764
Annual average	3,102	51
Ratio per 1,000 of mean strength	-	16·5
Jamaica:		
Aggregate of 15 years	16,343	207
Annual average	1,084	$13\frac{12}{15}$
Ratio per 1,000 of mean strength	-	12·6
Bermuda:		
Aggregate of 15 years	18,986	215
Annual average	1,265	$14\frac{5}{15}$
Ratio per 1,000 of mean strength	-	11·3
Canada:		
Aggregate of 15 years	117,606	1,607
Annual average	7,840	$107\frac{2}{15}$
Ratio per 1,000 of mean strength	-	13·6
Newfoundland:		
Aggregate of 15 years	5,643	220
Annual average	376	$14\frac{10}{15}$
Ratio per 1,000 of mean strength	-	38·9
Nova Scotia and New Brunswick:		
Aggregate of 15 years	39,243	503
Annual average	2,616	$33\frac{8}{15}$
Ratio per 1,000 of mean strength	-	12·8
Ionian Islands:		
Aggregate of 15 years	43,616	394
Annual average	2,907	$26\frac{4}{15}$
Ratio per 1,000 of mean strength	-	9·0
Malta:		
Aggregate of 15 years	38,662	750
Annual average	2,577	50
Ratio per 1,000 of mean strength	-	19·3
Gibraltar:		
Aggregate of 15 years	52,084	910
Annual average	3,472	$60\frac{10}{15}$
Ratio per 1,000 of mean strength	-	17·4
St. Helena:		
Aggregate of 15 years	6,491	64
Annual average	432	$4\frac{4}{15}$
Ratio per 1,000 of mean strength	-	9·8

APPENDIX LX.

(Given in by Sir A. M. Tulloch, K.C.B.)

MORTALITY in the ARMY at HOME, as compared with the Civil Population at the same Ages. Extracted from the "Statistical Report on Sickness, Mortality, and Invaliding among Troops in the United Kingdom," presented to Parliament in 1853, page 7.

In the Fifth Report of the Registrar General, an abstract is given of the fatal diseases or causes of death in 1840, at different periods of life, among the population of 24 English towns, in most of which troops are quartered; and from the census of 1841 we have obtained the numbers living at each of these ages in the same towns. We possess, in like manner, the ages of the dragoon guards and dragoons, in abstract No. VIII. of Appendix, of which the following is a summary:

Under 20.	20 to 30.	30 to 40.	40 and upwards.	Total of all Ages.
5,536	29,354	13,834	3,598	52,322

From this it appears that a very small proportion, amounting only to about one-sixth of these troops, are either under 20 or above 40; so that, for all practical purposes, the whole may be considered as between these two ages. To complete our comparison, therefore, upon a tolerably fair basis, it is only necessary to ascertain how many of the civil population would have died, by each class of diseases, had the numbers living been 29,354 between the ages of 20 and 30, and 13,834 between the ages of 30 and 40; the sum of these reduced to ratios per thousand of the strength will furnish the information required.

This has accordingly been done in abstract No. 2 of Appendix, where all the details will be found, and from which the following table has been framed.

—	Ratio of Deaths per 1,000 of mean strength.	
	Among Dragoon Guards and Dragoons.	Among a Town Population at the same period of life.
By fevers	1·4 } 1·5	1·2 } 1·5
„ eruptive fevers	0·1 }	0·3 }
„ diseases of the lungs	7·3	6·3
„ diseases of the liver	0·3	0·2
„ diseases of stomach and bowels	0·4	0·4
„ diseases of the brain	0·8	0·6
„ dropsies	0·5	0·4
„ all other diseases	1·6	1·2
„ sudden and violent deaths, &c.	1·2	1·3
Total	13·6	11·9

These results show a very remarkable coincidence, not only in the relative mortality of soldiers and civilians, but also in the proportion of deaths by each class of diseases. Indeed, with the exception of pulmonary affections, the difference will be found so slight as scarcely to deserve notice. The deaths by fever among the military exceed those of the civil population by only 2 in every 10,000 men, but they enjoy an exemption from eruptive fevers to exactly the same amount. The care taken to ascertain whether recruits have undergone vaccination, and, if not, to have it immediately performed, will sufficiently account for this exemption.

Diseases of the lungs are obviously the chief source of mortality, at the above ages, both in and out of the army; but the deaths from them are greater among soldiers than civilians in the proportion of 7·3 to 6·3.

In diseases of the liver and brain, and those classed under the head of "other diseases," there is a trifling preponderance among the military; while in those of the stomach and bowels, and in dropsies, the proportion is exactly the same in both.

It is remarkable that the ratio of deaths from accidents, violence, and suicide, is almost the same both among civil and military.

APPENDIX LXI.

(Given in by Sir A. M. Tulloch, K.C.B.)

1. RETURN showing the RATIO of MORTALITY per THOUSAND, of the Strength at the under-mentioned Periods of Life among the Non-commissioned Officers and Privates of White Troops serving at the following Stations, from 1st January 1830 to 31st March 1837.

STATIONS.		Under 18.*	18 to 25.	25 to 33.	33 to 40.	40 to 50.	Average of all ages.	REMARKS.
Household Cavalry	United Kingdom.	8·4	14·7	11·4	16·3	22·8	14·5	* No correct deductions can be drawn from the ratios under 18, as the numbers are so few and the results consequently irregular.
Cavalry of Line	United Kingdom.	4·4	13·9	14·	17·3	26·7	15·3	
Foot Guards	United Kingdom.	6·1	22·3	22·5	17·7	27·5	21·6	
Gibraltar	Mediterranean.	10·	18·7	23·6	29·5	34·4	22·3	
Malta	Mediterranean.	16·	13·	23·3	34·	56·7	22·3	
Ionian Islands	Mediterranean.	6·6	12·2	20·1	24·4	24·2	19·3	
Mediterranean Stations generally		10·	15·5	22·2	28·1	33·	21·	
Bermudas	North America.	—†	16·	42·	42·	76·	28·9	† Not given.
Nova Scotia, &c.	North America.	9·	14·	22·5	30·8	41·5	20·3	
Canada	North America.	—‡	19·7	27·8	37·8	35·	25·7	‡ Not given.
Windward and Leeward Command		4·	50·	74·	97·	123·	67·	
Jamaica		57·	70·	107·	131·	128·	91·0	
Cape of Good Hope		14·	9·	20·6	29·7	32·	17·6	
Mauritius		11·	20·8	37·5	52·7	86·6	34·6	
Ceylon		23·3	24·	55·	86·4	126·6	49·	
Bombay		—§	18·2	34·6	46·8	71·1	33·1	
Madras		—§	26·	59·3	70·7	86·5	52·2	§ Not given.
Bengal		—§	23·8	50·3	50·6	83·3	44·5	

2. RETURN showing similar RESULTS for the Ten Years from 1st April 1837 to 31st March 1847, at the under-mentioned Periods of Life, and at the following Stations.

STATIONS.		Under 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 and upwards.	Average of all ages.	REMARKS.
Household Cavalry	United Kingdom.	7·5	11·7	10·3	13·3	8·4	13·4	11·1	
Cavalry of Line	United Kingdom.	8·1	11·8	14·3	14·6	15·3	18·3	13·5	
Foot Guards	United Kingdom.	11·1	21·6	21·1	19·5	22·4	26·2	20·4	
Infantry of Line	United Kingdom.	13·1	17·8	19·8	19·8	21·	23·4	17·8	
Mediterranean Stations		10·	16·3	15·1	16·4	25·4	34·4	16·4	
Canada and Nova Scotia		14·8	13·1	17·7	19·2	20·3	35·6	17·	
Jamaica		37·	60·	50·	73·	83·	97·	59·	

APPENDIX LXII.

(Given in by Sir A. M. Tulloch, K.C.B.)

1.—ABSTRACT showing the ADMISSIONS INTO HOSPITAL and DEATHS among the TROOPS serving at various Stations abroad prior to 31st March 1837.

DISEASES.	White Troops, West Indies. 1817 to 1836.		Black Troops, West Indies. 1817 to 1836.		White Troops, Jamaica. 1817 to 1836.		Black Troops, Jamaica. 1817 to 1836.		White Troops, Ceylon. 1817 to 1836.		Black Troops, Ceylon. 1817 to 1836.		White Troops, Cape of Good Hope. 1818 to 1836.		Black Troops, Cape of Good Hope. 1822 to 1834.		White Troops, Mauritius. 1818 to 1836.		St. Helena. 1818 to 1821 and 1836 to 1837. Six Years.	
Aggregate Strength	86,661		40,934		51,567		5,729		42,978		34,630		22,714		4,136		30,515		5,908	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Fevers	62,163	3,195	6,856	190	46,922	5,253	634	47	20,846	1,056	11,680	234	1,994	44	272	3	4,709	53	421	13
Eruptive Fevers	13	1	373	102	10	- -	8	3	52	4	367	9	9	1	9	- -	6	—	—	—
Diseases of the Lungs	9,975	906	4,048	676	4,357	388	206	59	3,002	175	1,276	124	2,218	89	443	16	2,550	172	359	20
Diseases of the Liver	1,946	161	301	37	539	51	16	2	2,382	213	215	29	496	25	16	2	2,508	122	171	24
Diseases of the Stomach and Bowels	36,474	1,795	3,796	303	12,282	260	173	17	15,368	1,039	2,972	184	2,859	70	371	20	8,394	323	1,584	82
Epidemic Cholera	- -	- -	- -	- -	- -	- -	- -	- -	788	257	209	103	- -	- -	- -	- -	268	32	—	—
Diseases of the Brain	2,447	312	428	92	720	137	26	4	418	66	119	26	221	31	18	- -	1,236	83	41	2
Dropsies	659	180	215	87	268	61	28	17	1,086	89	169	59	48	13	3	- -	69	9	11	4
Rheumatic Affections	4,202	17	3,028	23	1,479	5	81	1	2,008	4	2,065	3	1,463	1	289	2	1,396	1	205	—
Venereal Affections	3,043	6	705	2	1,021	1	86	- -	3,093	2	1,021	2	4,777	8	268	- -	3,519	1	187	1
Abscesses and Ulcers	17,708	18	7,430	30	9,667	18	230	2	10,622	18	5,635	17	2,673	5	382	- -	5,842	9	430	—
Wounds and Injuries	11,149	60	3,274	35	6,164	21	145	3	5,726	38	2,181	21	2,861	6	770	1	4,103	14	384	4
Corporal Punishment	4,327	2	1,573	1	3,285	- -	145	- -	1,757	- -	612	- -	796	- -	232	- -	943	- -	178	—
Diseases of the Eyes	7,686	4	636	- -	4,644	- -	49	- -	2,997	- -	2,602	- -	720	- -	117	- -	958	1	209	—
Diseases of the Skin	559	1	277	8	337	- -	13	- -	579	- -	4,914	- -	317	- -	32	- -	433	- -	42	—
All other Diseases	2,584	145	617	59	1,760	59	95	17	1,376	39	513	47	1,054	18	180	1	1,174	15	138	—
Deaths from various Causes out of Hospital, including Accidents, and the Casualties of the Service	164,935	6,803	33,557	1,645	93,455	6,254	1,935	172	72,100	3,000	36,550	858	22,506	311	3,402	45	38,108	835	4,360	150
	- -	266	- -	- -	- -	342	- -	- -	- -	217	- -	73	- -	42	- -	7	- -	95	—	—
TOTAL	164,935	7,069	33,557	1,645	93,455	6,596	1,935	172	72,100	3,217	36,550	931	22,506	353	3,402	52	38,108	930	4,360	150
Ratio of Deaths per Thousand of Mean Strength	—	81·5	—	40·2	—	128·0	—	30·0	—	74·9	—	26·9	—	15·6	—	12·5	—	30·5	—	25·4

1.—Abstract showing the Admissions into Hospital and Deaths among the Troops serving at various Stations abroad prior to 31st March 1837—*continued.*

Diseases.	Gibraltar. — 1818 to 1836.		Malta. — 1817 to 1836.		Ionian Islands. — 1817 to 1836.		Bermudas. — 1817 to 1836.		Canada. — 1817 to 1836.		Nova Scotia. — 1817 to 1836.		Newfoundland. — 1825 to 1836.		Bengal. — 1817 to 1836.		Madras. — 1817 to 1836.		Bombay. — 1817 to 1836.	
Aggregate Strength -	60,269		40,826		70,293		11,721		64,280		46,442		3,951		145,199		142,939		66,208	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.								
Fevers - - -	9,687	563	7,078	118	32,160	887	1,591	129	13,044	147	3,055	71								
Eruptive Fevers - -	54	1	34	3	58	2	2	– –	102	10	65	1								
Diseases of the Lungs -	8,487	318	4,883	245	6,313	320	1,473	102	9,061	411	5,532	314								
Diseases of the Liver -	759	22	857	47	1,168	56	168	6	488	12	384	10								
Diseases of the Stomach and Bowels - -	11,202	128	6,317	147	10,969	237	4,865	62	9,480	84	4,146	67								
Epidemic Cholera - -	459	131	– –	– –	– –	– –	– –	– –	356	127	210	59								
Diseases of the Brain -	371	32	236	30	693	69	199	24	822	72	508	56								
Dropsies - - -	72	16	70	16	183	43	84	7	128	23	78	23								
Rheumatic Affections -	2,309	8	1,383	9	2,428	7	390	– –	2,427	3	1,310	3								
Venereal Affections -	3,450	1	7,336	2	4,660	3	461	– –	6,063	1	3,675	2								
Abscesses and Ulcers -	6,131	9	6,013	7	8,199	8	2,239	– –	6,624	10	4,626	3								
Wounds and Injuries -	5,372	24	4,105	23	8,442	28	1,583	4	9,904	42	6,545	20								
Corporal Punishment -	5,862	– –	1,628	– –	2,614	1	685	– –	1,981	– –	1,375	—								
Diseases of the Eyes -	903	– –	4,162	– –	2,903	– –	1,167	– –	2,771	– –	2,241	—								
Diseases of the Skin -	938	– –	858	– –	1,241	1	75	– –	1,332	– –	1,030	—								
All other Diseases - -	2,171	38	1,679	18	2,407	49	374	4	2,374	40	1,394	20								
	58,227	1,291	46,639	665	84,438	1,711	15,356	338	66,957	982	36,174	649								
Deaths from various Causes out of Hospital, including Accidents and the Casualties of the Service	– –	55	– –	98	– –	214	– –	78	– –	304	– –	180								
Total - - -	58,227	1,346	46,639	763	84,438	1,925	15,356	416	66,957	1,286	36,174	829	– –	149	– –	10,978	– –	10,877	– –	4,155
Ratio of Deaths per Thousand of Mean Strength	- -	22·3	- -	18·7	- -	27·4	- -	35·4	- -	20·0	- -	17·8	- -	37·7	- -	75·6	- -	76·1	- -	62·8

Data not available.

2.—Abstract showing the Admissions into Hospital and Deaths among the Troops serving at various Stations abroad subsequent to 31st March 1837.

Diseases.	White Troops. West Indies. 1837 to 1853.		Black Troops. West Indies. 1837 to 1853.		White Troops. Jamaica. 1837 to 1855.		Black Troops. Jamaica. 1838 to 1855.		White Troops. Ceylon. 1837 to 1856.		Black Troops. Ceylon. 1837 to 1856.		White Troops. Cape of Good Hope. 1838 to 1856.		Black Troops. Cape of Good Hope. 1838 to 1856.		White Troops. Mauritius. 1838 to 1855.		St. Helena. 1837 to 1856.	
Aggregate Strength	51,115		19,967		22,100		13,645		29,908		35,305		73,508		10,066		29,178		8,258	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Fevers	34,521	1,727	2,744	58	10,427	814	2,506	52	7,786	120	9,862	104	3,821	126	217	1	3,583	80	671	4
Eruptive Fevers	71	1	288	23	14	2	246	12	10	3	663	20	69	- -	502	7	30	- -	18	—
Diseases of the Lungs	6,217	442	1,728	198	2,185	152	1,099	107	2,844	154	1,861	97	7,550	238	1,755	68	2,857	190	864	44
Diseases of the Liver	646	31	47	11	162	10	28	8	1,329	84	278	23	631	16	19	2	480	23	102	2
Diseases of the Stomach and Bowels	18,971	559	1,995	109	5,948	154	1,275	56	11,660	478	3,878	267	10,081	282	873	34	6,482	241	1,410	21
Epidemic Cholera	16	4	- -	- -	89	47	307	160	291	120	129	86	- -	- -	- -	- -	56	34	—	—
Diseases of the Brain	1,614	184	179	33	647	57	137	27	583	66	318	38	1,070	56	78	6	507	32	114	5
Dropsics	161	49	88	41	64	6	63	20	107	20	168	42	69	16	11	4	59	14	8	1
Rheumatic Affections	2,808	8	1,927	17	724	5	968	7	1,934	7	2,766	14	4,789	7	724	1	1,355	2	504	—
Venereal Affections	3,914	3	1,178	1	876	1	1,018	3	2,791	2	1,442	4	9,532	6	615	1	2,272	- -	841	—
Abscesses and Ulcers	9,929	13	2,593	18	3,058	5	960	3	3,997	7	6,145	7	8,960	11	878	3	3,435	4	1,061	1
Wounds and Injuries	5,625	13	1,640	13	2,431	7	743	- -	2,595	7	2,249	12	6,846	12	1,344	5	2,007	5	1,080	4
Corporal Punishment	475	- -	225	- -	163	- -	61	- -	180	- -	172	- -	471	- -	196	- -	204	- -	22	—
Diseases of the Eyes	8,913	1	431	1	2,287	- -	287	- -	4,232	- -	2,245	- -	4,086	- -	272	- -	1,735	1	219	—
Diseases of the Skin	485	2	379	2	286	- -	340	1	234	- -	2,645	- -	692	- -	57	- -	225	- -	97	—
All other Diseases	2,340	33	616	43	961	32	663	26	1,517	35	669	31	5,659	115	358	8	1,252	27	469	6
Total of Men under Treatment, according to Sanitary Reports	96,706	3,070	16,058	568	30,322	1,292	10,701	482	42,090	1,103	35,490	745	64,326	885	7,899	140	26,539	653	7,480	88
Died by Diseases suddenly, or out of Hospital	- -	61	- -	43	- -	29	- -	14	- -	21	- -	16	- -	62 72	- -	16	- -	21	- -	4
Total by Diseases	- -	3,131	- -	611	- -	1,321	- -	496	- -	1,124	- -	761	- -	1,019	- -	156	- -	674	- -	92
Died by accidental Causes	- -	64	- -	33	- -	22	- -	25	- -	32	- -	39	- -	150	- -	21	- -	27	- -	10
Killed in Action, so far as can be ascertained	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	238	-	32	- -	- -	- -	- -
Total	96,706	3,195	16,058	644	30,322	1,343	10,701	521	42,090	1,156	35,490	800	64,326	1,407	7,899	209	26,539	701	7,480	102
Ratio of Deaths per Thousand of Mean Strength, exclusive of killed in action	- -	62·5	- -	32·2	- -	60·8	- -	38·2	- -	38·6	- -	22·7	- -	15·9	- -	17·5	- -	24·0	- -	12·3

2.—Abstract showing the Admissions into Hospital and Deaths among the Troops serving at various Stations abroad subsequent to 31st March 1837—*continued.*

Diseases.	Gibraltar. 1837 to 1856.		Malta. 1837 to 1856.		Ionian Islands. 1837 to 1856.		Bermudas. 1837 to 1856.		Canada. 1837 to 1856.		Nova Scotia. 1837 to 1856.		Newfoundland. 1837 to 1856.		Presidency of Bengal. 1838 to 1856.		Presidency of Madras. 1838 to 1856.		Presidency of Bombay. 1838 to 1856.		Van Diemen's Land. 1839 to 1856.		New Zealand. 1844 to 1856.	
Aggregate Strength -	66,412		47,961		55,723		22,398		133,925		46,006		6,908		227,303		100,545		96,516		17,600		15,128	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Fevers - - -	6,392	153	10,772	107	14,991	302	3,487	464	12,460	262	2,160	38	113	6	176,385	3,272	29,456	384	74,056	1,248	947	17	224	10
Eruptive Fevers - -	175	6	140	5	91	4	10	- -	361	30	116	2	21	- -	548	92	215	21	142	18	12	- -	14	—
Diseases of the Lungs -	7,709	272	5,400	226	7,360	266	2,710	142	19,924	868	7,342	308	1,116	24	18,891	1,089	10,698	291	8,244	354	2,210	73	1,295	66
Diseases of the Liver -	597	5	963	22	705	17	262	9	1,162	29	228	12	56	5	14,310	961	8,858	451	6,875	404	92	2	66	4
Diseases of the Stomach and Bowels - -	12,367	107	9,534	125	8,887	88	5,561	38	18,368	125	4,640	52	888	- -	84,625	5,306	36,856	1,274	36,198	1,779	1,212	11	1,153	8
Epidemic Cholera -	140	79	479	208	159	96	- -	- -	406	128	- -	- -	7	5	5,852	2,423	1,706	839	2,506	1,203	—	—	—	—
Diseases of the Brain -	804	51	476	27	645	60	421	38	2,609	218	728	54	93	10	7,492	1,202	3,154	264	2,436	295	179	8	92	6
Dropsies - -	71	13	51	12	90	10	19	1	147	35	39	11	19	5	577	141	266	56	302	59	25	5	11	3
Rheumatic Affections -	2,882	4	2,340	7	2,372	6	951	3	6,249	8	1,921	2	511	1	21,715	73	11,269	33	11,867	24	887	- -	685	—
Venereal Affections -	10,294	- -	5,630	1	5,461	2	1,962	1	16,861	4	4,968	2	122	- -	52,038	106	31,670	51	25,235	32	1,296	- -	464	—
Abscesses and Ulcers -	8,567	7	6,742	6	9,477	5	2,788	3	13,400	20	4,342	5	443	1	19,299	64	13,473	15	11,377	11	1,795	6	1,409	2
Wounds and Injuries -	5,712	20	4,355	15	5,344	20	1,801	12	16,767	36	4,850	13	628	3	21,526	441	10,827	41	9,204	74	1,693	4	1,271	22
Corporal Punishment -	187	- -	286	- -	301	- -	89	- -	821	- -	195	- -	50	- -	1,356	- -	441	- -	530	- -	59	- -	56	—
Diseases of the Eyes -	4,288	- -	3,461	1	4,683	- -	2,697	- -	9,150	- -	3,830	- -	223	- -	19,026	3	5,011	- -	4,401	- -	1,206	- -	659	—
Diseases of the Skin -	1,187	4	664	- -	1,108	- -	301	1	2,191	4	657	2	27	- -	1,710	5	2,146	2	817	5	205	1	106	—
All other Diseases - -	3,486	55	2,817	29	3,450	37	1,142	12	6,452	119	2,437	48	443	4	20,208	613	9,071	148	10,129	157	967	10	603	16
Total of Men under Treatment according to Sanitary Reports - -	64,858	776	54,110	791	65,124	913	24,201	724	127,328	1,886	38,453	549	4,760	64	465,658	15,791	175,117	3,870	204,319	5,663	12,785	137	8,008	137
Died by Diseases suddenly, or out of Hospital -	- -	21	- -	25	- -	23	- -	30	- -	136	- -	32	- -	5	- -	1,003	- -	181	- -	106	- -	26	- -	11
Total by Diseases - -	- -	797	- -	816	- -	936	- -	754	- -	2,022	- -	581	- -	69	- -	16,794	- -	4,051	- -	5,769	- -	163	- -	148
Died by accidental Causes	- -	58	- -	58	- -	60	- -	41	- -	277	- -	116	- -	7	- -	540	- -	122	- -	113	- -	45	- -	45
Killed in Action, so far as can be ascertained -	- -	- -	- -	- -	- -	- -	- -	- -	- -	12	- -	- -	- -	- -	- -	1,215	- -	13	- -	90	- -	- -	- -	41
Total - -	64,858	855	54,110	874	65,124	996	24,201	795	127,328	2,311	38,453	697	4,760	76	465,658	18,549	175,117	4,186	204,319	5,902	12,785	208	8,008	234
Ratio of Deaths per Thousand of Mean Strength, exclusive of killed in action - - -	- -	12·9	- -	18·2	- -	17·9	- -	35·5	- -	17·2	- -	15·1	- -	11·0	- -	76·2	- -	41·5	- -	60·2	- -	11·8	- -	12·8

3.—Abstract showing the Ratio of Admissions into Hospital and Deaths per Thousand of Mean Strength by each Class of Diseases, for the Period prior to 1837 contained in the above Table, compared with what took place subsequent to that date.

	West Indies. White Troops.				West Indies. Black Troops.				Jamaica. White Troops.				Jamaica. Black Troops.				Ceylon. White Troops.			
	Admissions.		Deaths.		Admissions.		Deaths.		Admissions.		Deaths.		Admissions.		Deaths.		Admissions.		Deaths.	
	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.
Fevers	717	675	36·9	33·8	168	137	4·6	2·9	910	472	101·9	36·9	Data not available.	184	8·2	3·8	485	261	24·6	4·1
Eruptive Fevers	-	1	-	-	9	14	2·5	1·2	·2	-	-	-		18	·5	·9	1	-	·1	—
Diseases of the Lungs	115	122	10·4	8·6	99	87	16·5	9·9	84·8	99	7·5	6·9		81	10·3	7·8	70	95	4·1	5·1
Diseases of the Liver	22	13	1·8	·6	7	2	·9	·5	10	7	1·	·4		2	·4	·6	55	44	4·9	2·8
Diseases of the Stomach and Bowels	421	371	20·7	10·9	93	100	7·4	5·5	238	269	5·1	7·		93	3·	4·1	358	390	24·2	16·
Epidemic Cholera	-	·3	-	·1	-	-	-	-	-	4	-	2·1		22	-	11·7	18	10	6·	4·
Diseases of the Brain	28	32	3·7	3·6	10	9	2·2	1·6	14	29	2·6	2·6		10	·6	2·	10	19	1·5	2·2
Dropsies	8	3	2·1	1·	5	4	2·1	2·	5	3	1·2	·3		5	3·	1·5	25	3	2·1	·7
Rheumatic Affections	49	55			74	97			29	33				71			47	65		
Venereal Affections	35	77			17	59			20	40				75			72	93		
Abscesses and Ulcers	204	194			182	130			187	138				70			247	134		
Wounds and Injuries	129	110	2·9	1·4	80	82	3·8	4·8	120	110	2·	2·3		54	4·	2·9	133	87	2·3	1·9
Corporal Punishment	50	9			38	11			64	7				4			41	6		
Diseases of the Eyes	89	174			16	22			90	103				21			70	141		
Diseases of the Skin	6	9·7			7	19			6	13				25			14	8		
All other Diseases	30	46			15	31			34	44				49			32	51		
	1,903	1,892	78·5	60·	820	804	40·	28·4	1,812	1,371	121·3	58·5		784	30·	35·3	1,678	1,407	69·8	36·8

(continued)

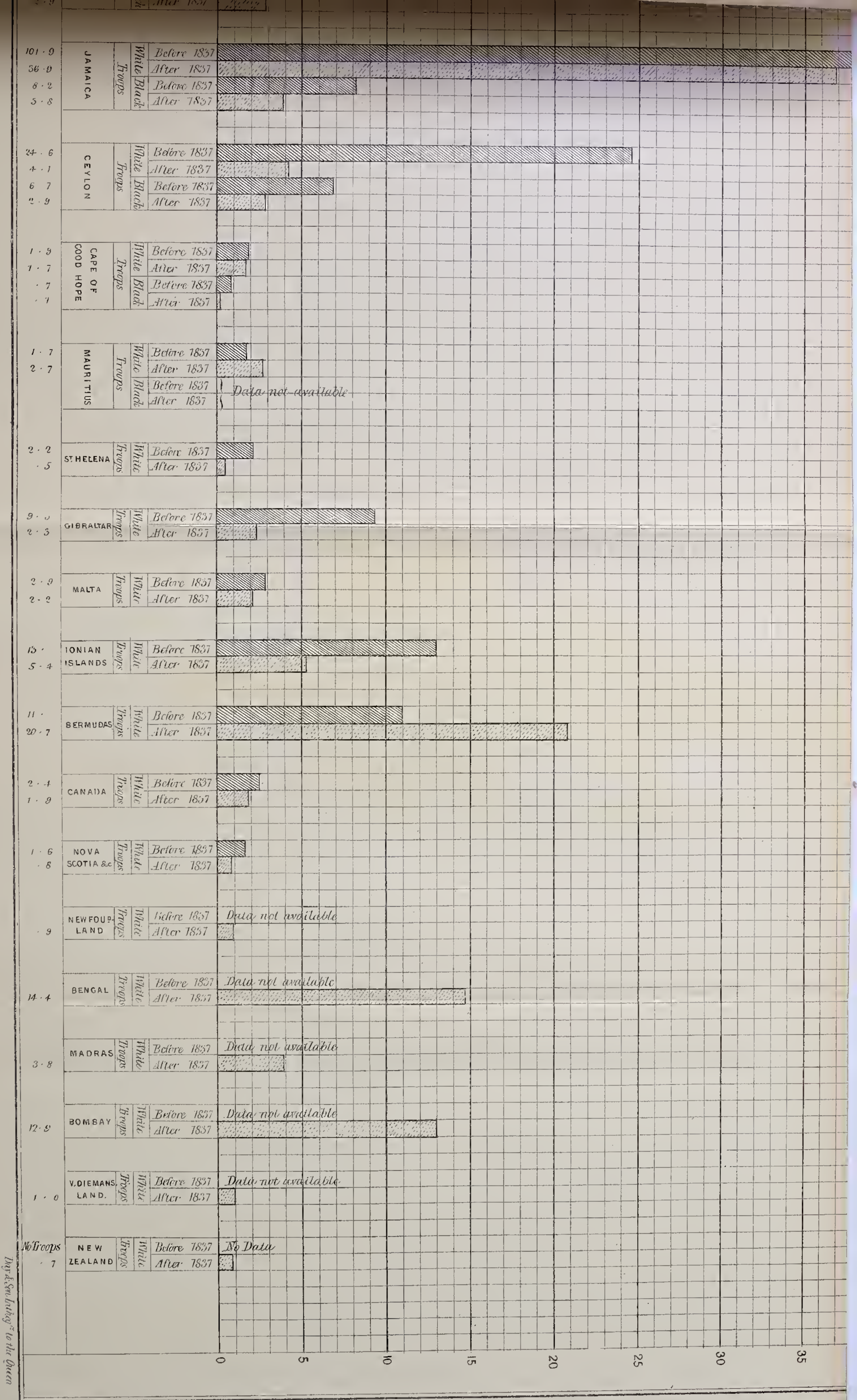
	Ceylon. Black Troops.				Cape of Good Hope. White Troops.				Cape of Good Hope. Black Troops.				Mauritius.				St. Helena.			
	Admissions.		Deaths.		Admissions.		Deaths.		Admissions.		Deaths.		Admissions.		Deaths.		Admissions.		Deaths.	
	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.
Fevers	337	279	6·7	2·9	88	52	1·9	1·7	66	21	·7	·1	154	123	1·7	2·7	71	81	2·2	·5
Eruptive Fevers	11	19	·3	·6	-	1	·1	-	2	50	-	·7	·2	1	-	-	-	2	—	—
Diseases of the Lungs	37	53	3·6	2·7	98	103	3·9	3·2	107	174	3·9	6·7	84	98	5·6	6·5	61	105	3·4	5·3
Diseases of the Liver	6	8	·8	·7	22	9	1·1	·2	4	2	·5	·2	82	16	4·	·8	29	12	4·	·2
Diseases of the Stomach and Bowels	86	110	5·3	7·6	126	137	3·1	3·8	90	87	4·8	3·4	275	222	10·6	8·3	268	171	13·9	2·6
Epidemic Cholera	6	4	3·	2·4	-	-	-	-	-	-	-	-	9	2	1·1	1·2	—	—	—	—
Diseases of the Brain	3	9	·8	1·1	10	14	1·3	·8	4	8	-	·6	41	17	2·7	1·1	7	14	·3	·6
Dropsies	5	5	1·7	1·2	2	1	·6	·2	1	1	-	·4	2·3	2	·3	·5	2	1	·7	·1
Rheumatic Affections	60	78			64	65			70	72			46	46			35	61		
Venereal Affections	30	41			210	130			65	61			115	78			32	102		
Abscesses and Ulcers	162	174			118	122			92	87			191	118			73	128		
Wounds and Injuries	63	64	2·6	1·9	126	93	1·7	2·1	186	134	1·	1·8	134	69	1·4	1·3	65	131	·9	1·3
Corporal Punishment	18	5			35	6			56	19			31	7			30	3		
Diseases of the Eyes	75	63			32	55			28	27			32	59			35	26		
Diseases of the Skin	142	75			14	10			8	6			14	8			7	12		
All other Diseases	15	19			46	77			44	36			38·5	43			23	57		
	1,056	1,005	24·8	21·1	991	875	13·7	12·	823	785	10·9	13·9	1,249	909	27·4	22·4	741	906	25·4	10·6

3.—Abstract showing the Ratio of Admissions into Hospital and Deaths per Thousand of Mean Strength by each Class of Diseases, for the Period prior to 1837 contained in the above Table, compared with what took place subsequent to that date—*continued*.

	Gibraltar.				Malta.				Ionian Islands.				Bermudas.				Canada.			
	Admissions.		Deaths.		Admissions.		Deaths.		Admissions.		Deaths.		Admissions.		Deaths.		Admissions.		Deaths.	
	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.
Fevers	161	96	9·3	2·3	173	224	2·9	2·2	457	269	13·	5·4	136	156	11·	20·7	214	93	2·4	1·9
Eruptive Fevers	1	3	- -	·1	1	3	·1	·1	1	2	- -	·1	—	—	—	—	2	3	·2	·2
Diseases of the Lungs	141	116	5·3	4·1	120	112	6·	4·7	90	132	4·8	4·8	126	121	8·7	6·3	148	149	6·7	6·5
Diseases of the Liver	13	9	·4	·1	21	21	1·1	·5	17	13	·8	·3	14	12	·5	·4	8	9	·2	·2
Diseases of the Stomach and Bowels	186	186	2·1	1·6	155	199	3·6	2·6	156	159	3·5	1·6	415	248	5·3	1·7	155	137	1·3	1·
Epidemic Cholera	7	2	2·2	1·2	- -	10	·8	4·3	- -	3	- -	1·7	—	—	—	—	6	3	2·1	1·
Diseases of the Brain	6	12	·5	·8	6	10	·4	·6	10	11	1·	1·1	17	19	2·	1·7	14	19	1·2	1·6
Dropsies	1	1	·3	·2	2	1	- -	·3	25	2	·6	·2	7	1	·6	·1	2	1	·4	·3
Rheumatic Affections	38	43			34	49			34·5	42			33	42			40	47		
Venereal Affections	57	155			180	117			66·5	98			39	88			99	126		
Abscesses and Ulcers	102	129			147	140			117	170			191	124			109	100		
Wounds and Injuries	89	86	1·3	1·3	100	91	1·4	1·2	120	96	1·5	1·2	135	80	·7	1·4	162	125	1·6	1·4
Corporal Punishment	16	3			40	6			37	5			59	4			32	6		
Diseases of the Eyes	97	65			102	72			41	84			99	121			45	68		
Diseases of the Skin	15	18			21	14			17·5	20			7	13			22	16		
All other Diseases	36	52			40	59			34	62			32	51			39	48		
	966	976	21·4	11·7	1,142	1,128	16·3	16·5	1,201	1,168	25·2	16·4	1,310	1,080	28·8	32·3	1,097	950	16·1	14·1

(*continued*)

	Nova Scotia, &c.				Newfoundland.				Presidency of Bengal.				Presidency of Madras.				Presidency of Bombay.				Van Diemen's Land.		New Zealand.	
	Admissions.		Deaths.		Admissions.		Deaths.		Admissions.		Deaths.		Admissions.		Deaths.		Admissions.		Deaths.		After 1837.		After 1837.	
	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Before 1837.	After 1837.	Admissions.	Deaths	Admissions.	Deaths.
Fevers	69	47	1·6	·8		16		·9		776		14·4		293		3·8		767		12·9	54	1·	15	·7
Eruptive Fevers	2	2	—	—		3		—		2		·4		2		·2		1		·2	1	—	1	—
Diseases of the Lungs	125	159	7·1	6·7		167		3·5		83		4·8		106		2·9		86		3·7	126	4·1	79	4·4
Diseases of the Liver	9	5	·2	·3		8		·7		63		4·2		88		4·5		71		4·2	5	·1	4	·3
Diseases of the Stomach and Bowels	94	101	1·5	1·1		129		—		372		23·3		367		12·7		375		18·4	69	·6	76	·5
Epidemic Cholera	5	—	1·4	—		1		·7		25		10·7		17		8·3		26		12·5	—	—	—	—
Diseases of the Brain	11	16	1·3	1·2		13		1·5		33		5·3		31		2·6		25		3·1	10	·5	6	·4
Dropsies	2	1	·5	·2		3		·7		2		·6		3		·5		3		·6	1	·3	1	·2
Rheumatic Affections	30	42				74				96				42				123			50		45	
Venereal Affections	83	108				18				29				315				262			73		31	
Abscesses and Ulcers	105	94				64				85				134				118			102		93	
Wounds and Injuries	148	105	1·1	1·6		91		1·3		95		5·7		108		2·9		95		3·1	96	1·2	84	2·6
Corporal Punishment	31	4				7				6				4				5			3		4	
Diseases of the Eyes	51	83				32				84				50				46			69		43	
Diseases of the Skin	23	14				4				7				21				9			12		7	
All other Diseases	32	53				64				89				90				105			55		40	
	820	836	14·7	11·9	—	689	37·7	9·3		2,047	75·	69·5		1,711	76	58·4		2,117	62 7	58·7	726	7·8	529	9·1



101·9 JAMAICA Troops White Before 1837
36·9 After 1837
8·2 Black Before 1837
3·8 After 1837
24·6 CEYLON Troops White Before 1837
4·1 After 1837
6·7 Black Before 1837
2·9 After 1837
1·9 CAPE OF GOOD HOPE Troops White Before 1837
1·7 After 1837
·7 Black Before 1837
·1 After 1837
1·7 MAURITIUS Troops White Before 1837
2·7 After 1837
Black Before 1837
After 1837
Data not available
2·2 ST. HELENA Troops White Before 1837
·5 After 1837
9·3 GIBRALTAR Troops White Before 1837
2·3 After 1837
2·9 MALTA Troops White Before 1837
2·2 After 1837
13· IONIAN ISLANDS Troops White Before 1837
5·4 After 1837
11· BERMUDAS Troops White Before 1837
20·7 After 1837
2·4 CANADA Troops White Before 1837
1·9 After 1837
1·6 NOVA SCOTIA &c Troops White Before 1837
·8 After 1837
NEWFOUNDLAND Troops White Before 1837
·9 After 1837
Data not available
BENGAL Troops White Before 1837
14·4 After 1837
Data not available
MADRAS Troops White Before 1837
3·8 After 1837
Data not available
BOMBAY Troops White Before 1837
12·9 After 1837
Data not available
V. DIEMANS LAND. Troops White Before 1837
1·0 After 1837
Data not available
No Troops NEW ZEALAND Troops White Before 1837
·7 After 1837
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0
5
10
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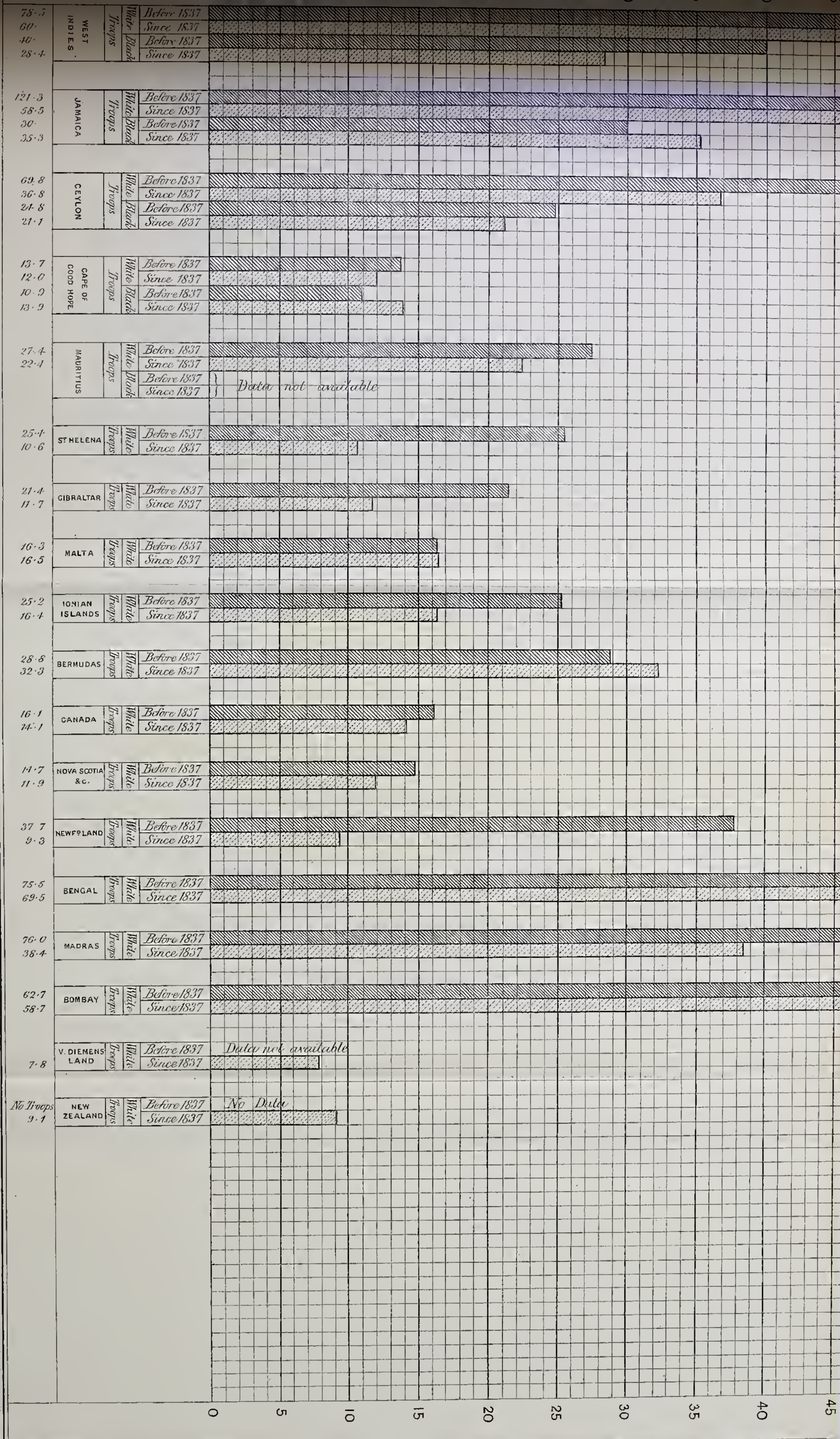
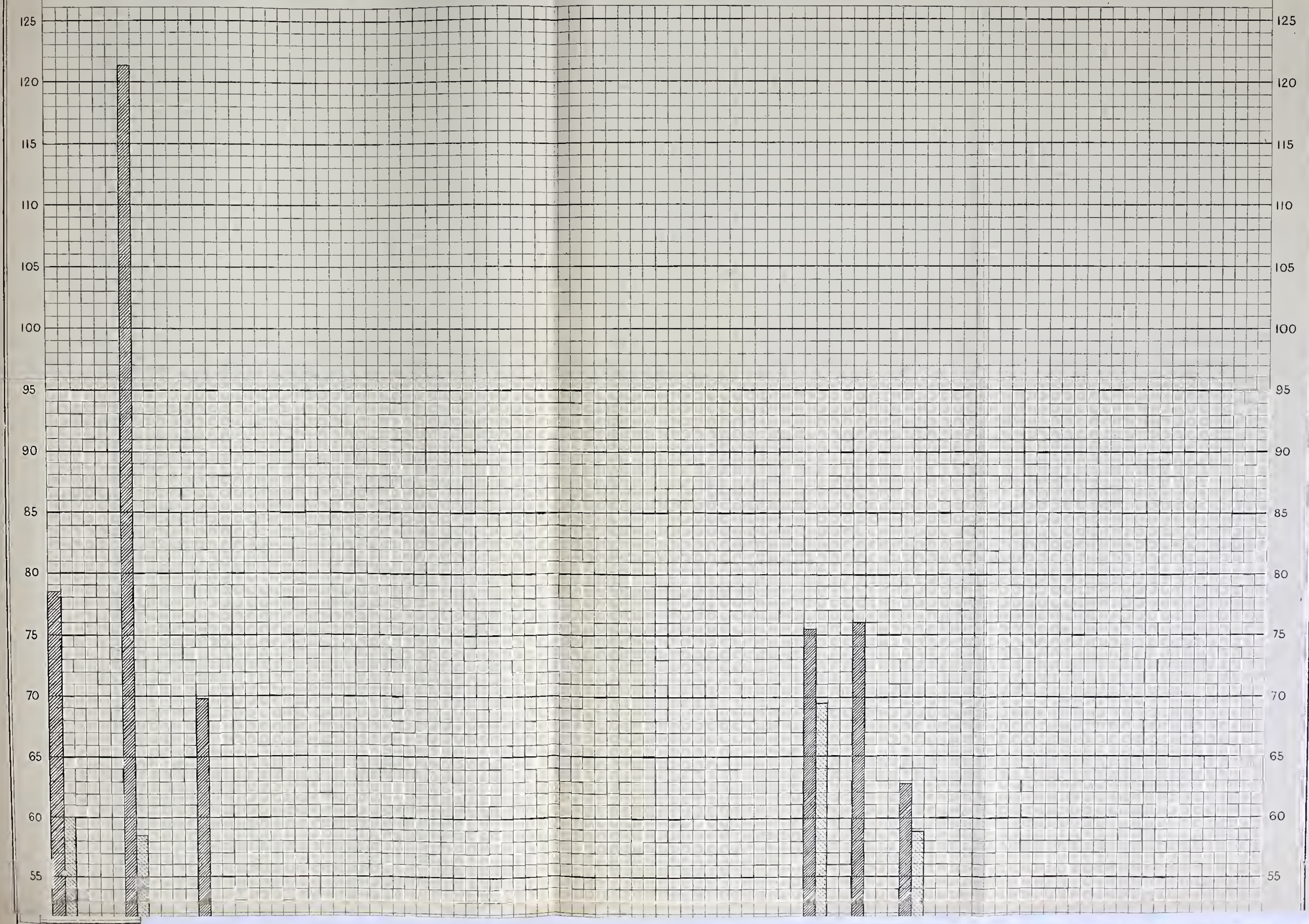
35
Day & Son Lithog^rs to the Queen



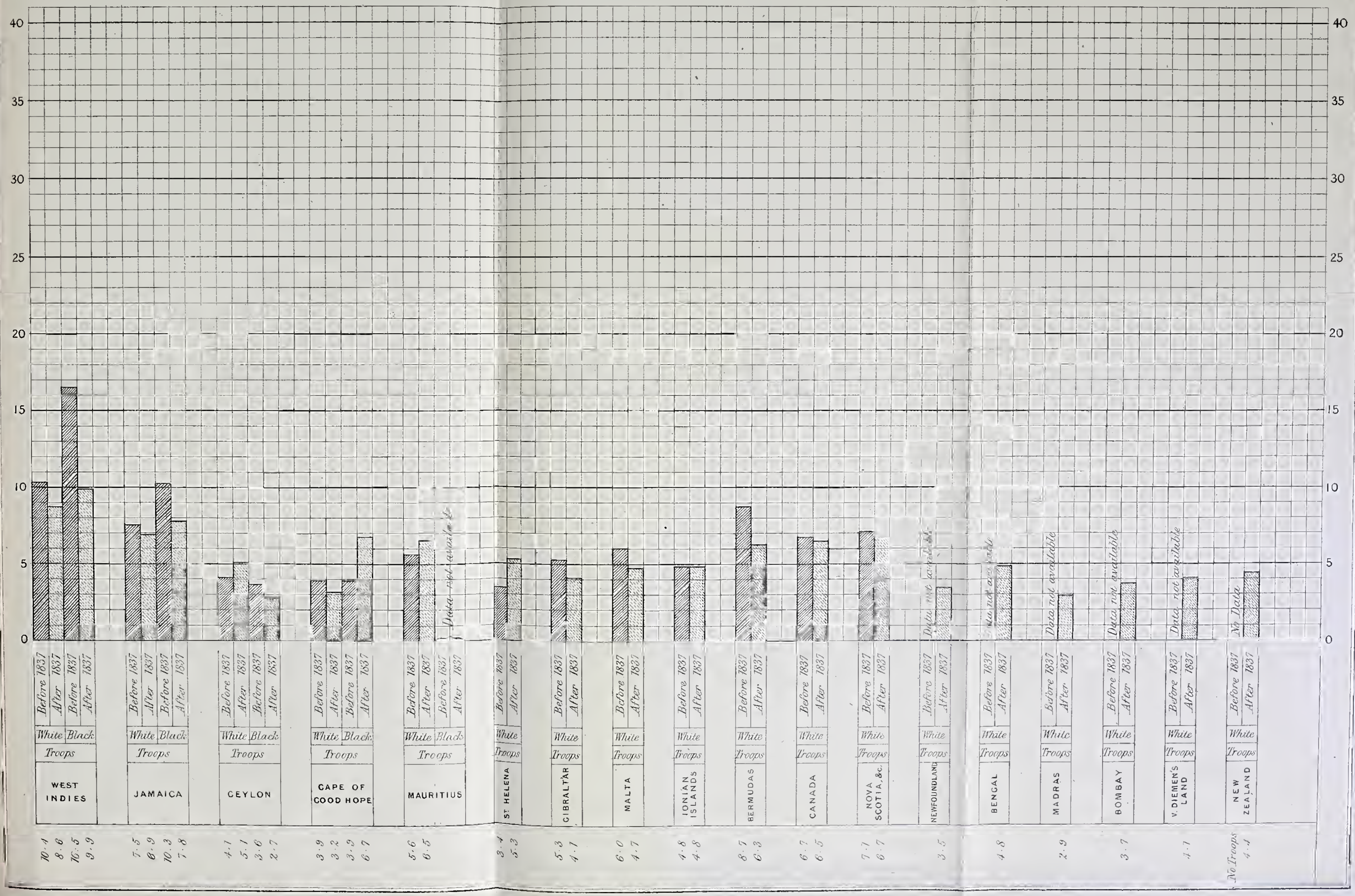
Day & Son Lith^rs to the Queen

SCALE SHEWING THE RELATIVE DEGREE OF MORTALITY BY ALL DISEASES, BEFORE AND SINCE 1837, AMONG THE TROOPS IN THE UNDERMENTIONED COLONIES.

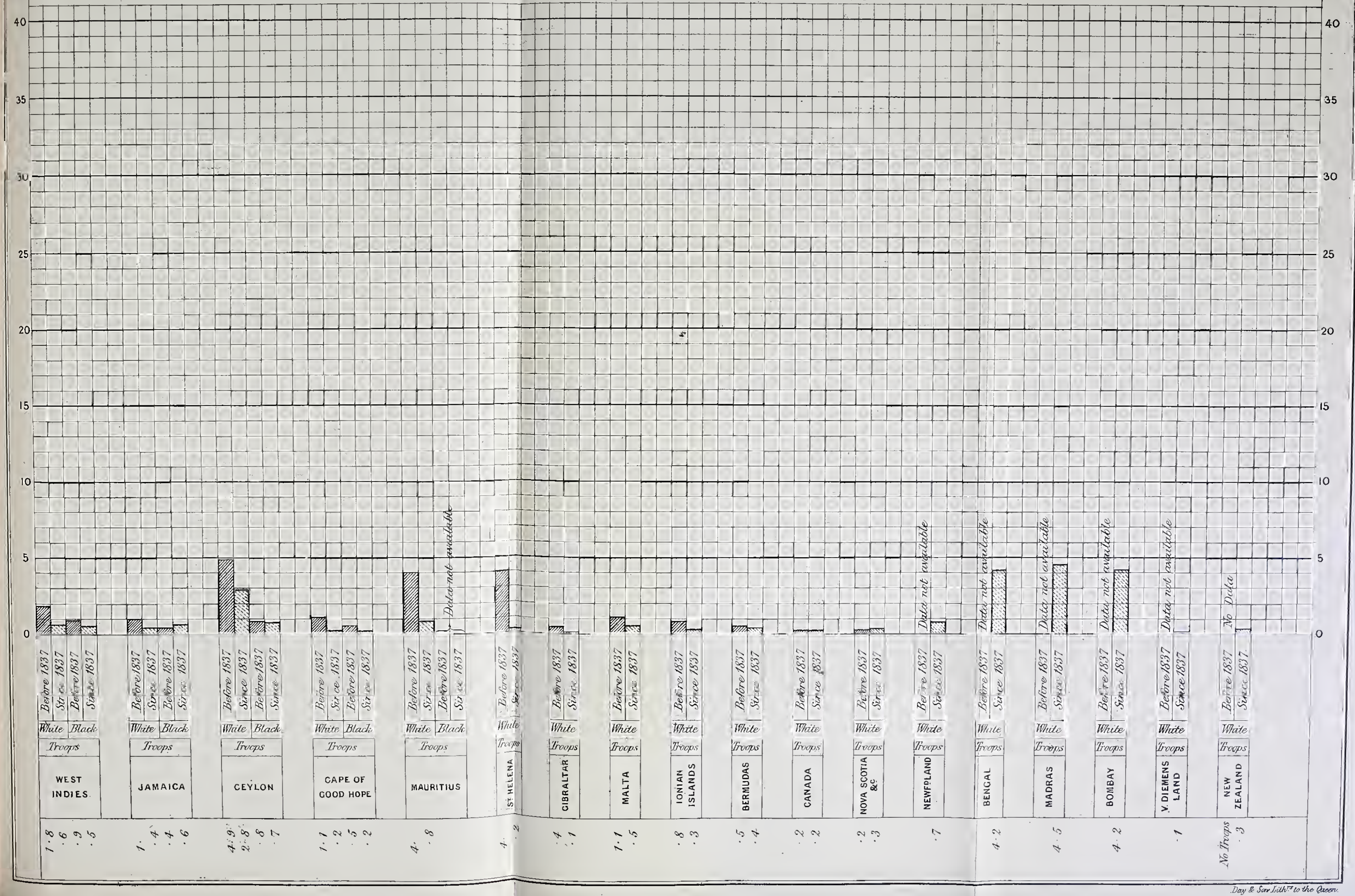


SCALE SHEWING THE RELATIVE DEGREE OF MORTALITY BY FEVER, BEFORE AND SINCE 1837. AMONG THE TROOPS IN THE UNDERMENTIONED COLONIES.

SCALE, SHEWING THE RELATIVE DEGREE OF MORTALITY BY DISEASES OF THE LUNGS, BEFORE AND SINCE 1837, AMONG THE TROOPS IN THE UNDERMENTIONED COLONIES.



SCALE SHEWING THE RELATIVE DEGREE OF MORTALITY BY DISEASES OF THE LIVER, BEFORE AND SINCE 1837, AMONG THE TROOPS IN THE UNDERMENTIONED COLONIES.



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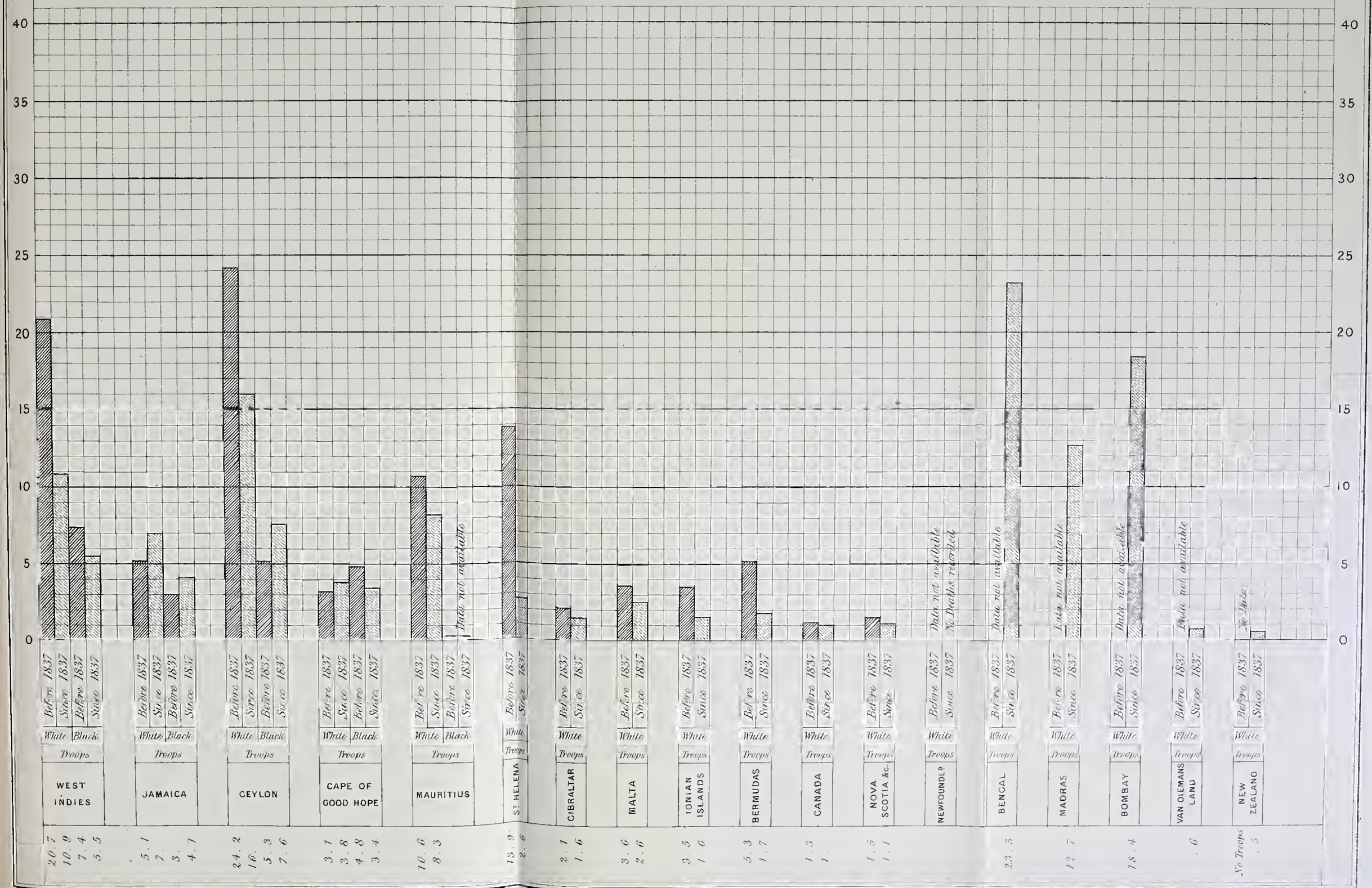
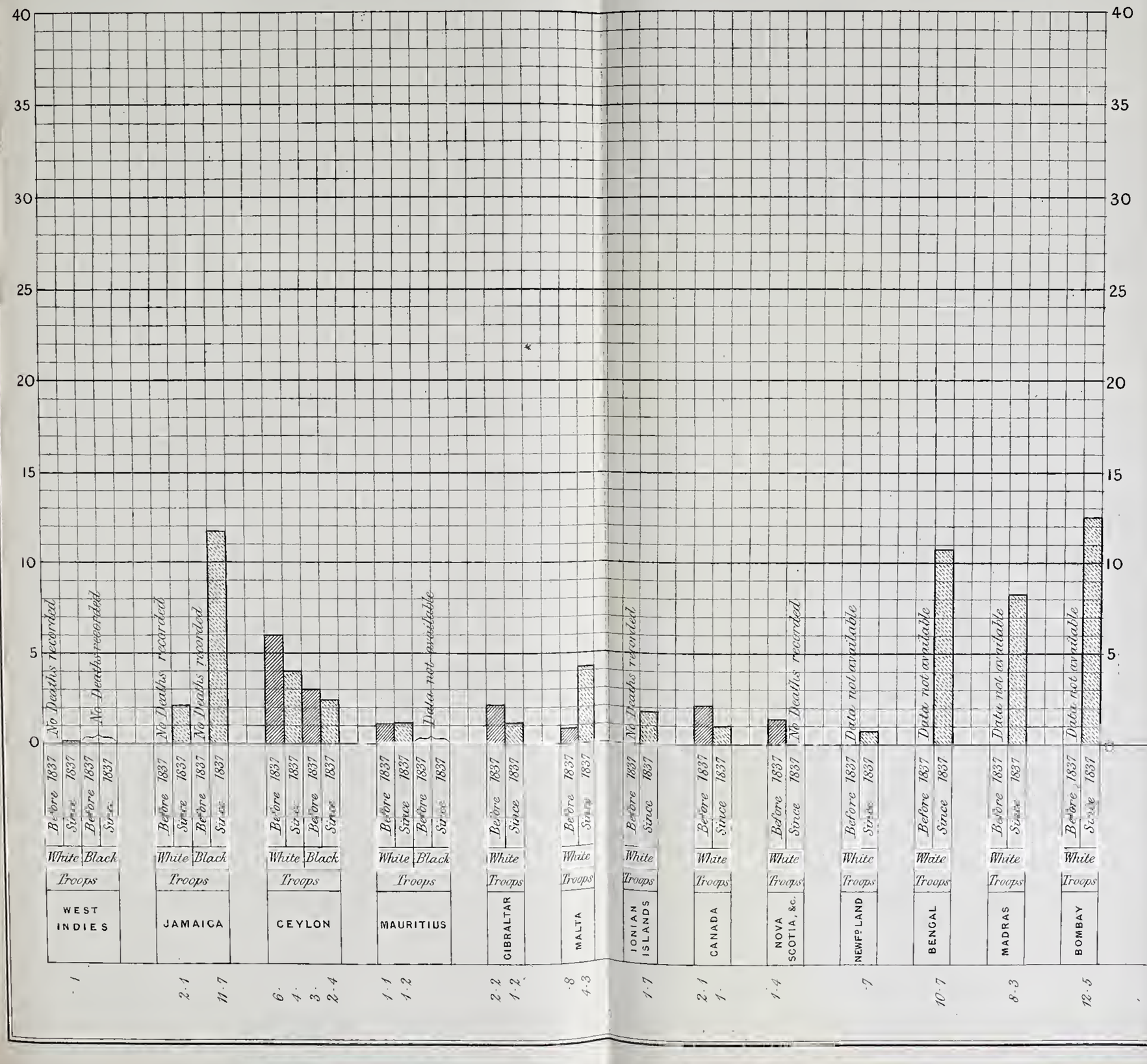
SCALE SHEWING THE RELATIVE DEGREE OF MORTALITY BY DISEASES OF THE STOMACH AND BOWELS BEFORE AND SINCE 1837 AMONG THE TROOPS IN THE UNDERMENTIONED COLONIES.



SCALE, SHEWING THE RELATIVE DEGREE OF MORTALITY BY EPIDEMIC CHOLERA, BEFORE AND SINCE 1837, AMONG THE TROOPS IN THE UNDERMENTIONED COLONIES.



No Deaths by Cholera are recorded before or Since 1837 as having occurred among the Troops stationed at,

The Cape of Good Hope — *Van Diemens Land*
Saint Helena — *or*
Bermudas — *New Zealand*

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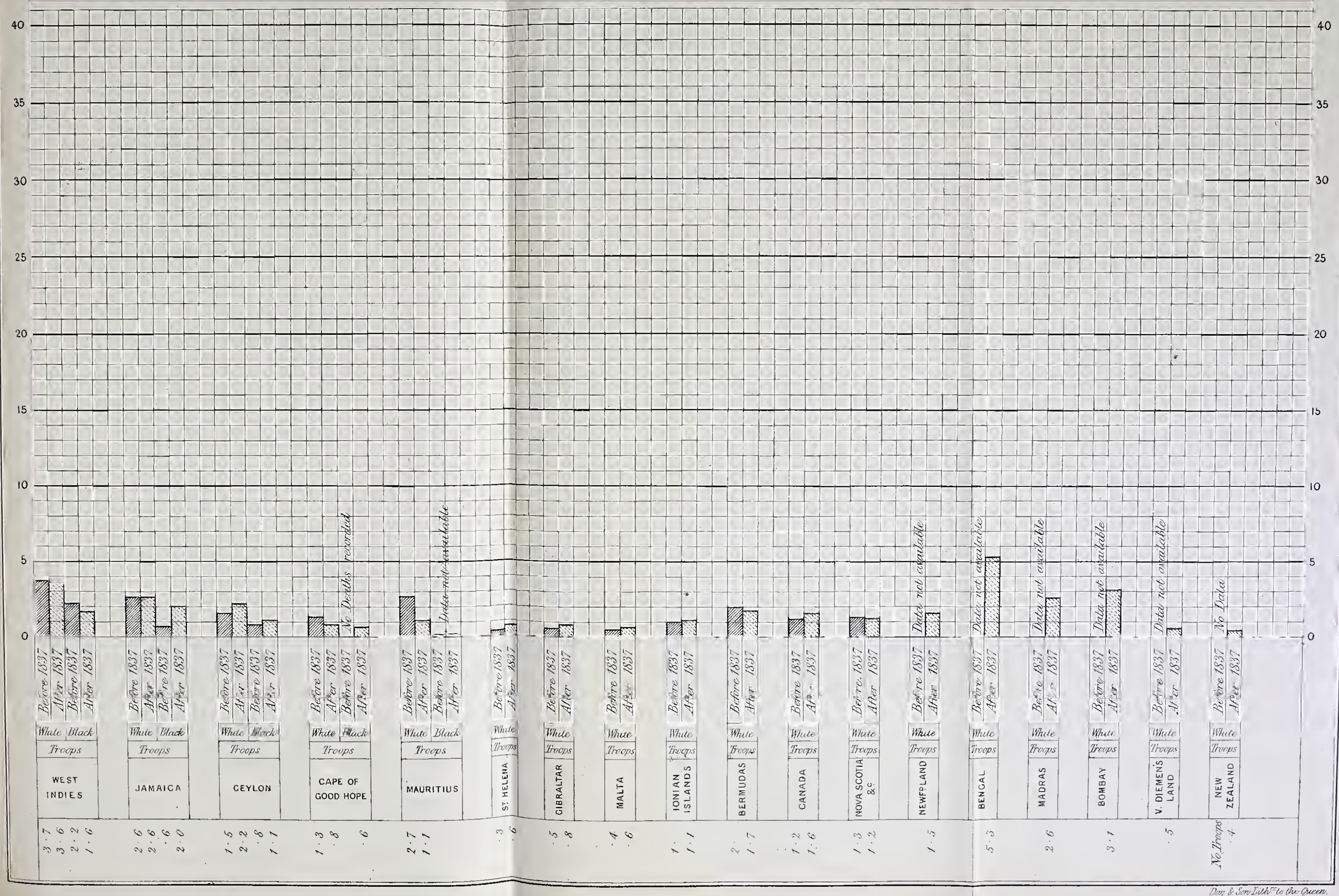
SCALE SHEWING THE RELATIVE DEGREE OF MORTALITY BY DISEASES OF THE BRAIN, BEFORE AND SINCE 1837, AMONG THE TROOPS IN THE UNDERMENTIONED COLONIES.



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APPENDIX LXIII.

(Given in by Sir A. M. Tulloch, K.C.B.)

TABLE showing the Ratio of Mortality among the Negro Slave Population in each of the West India Colonies during the undermentioned Periods, compared with that of the Black Troops. Extracted from "Appendix to Report on the Sickness, Mortality, and Invaliding among the Troops serving in the West Indies," presented to Parliament in 1838 (page 6).

Colonies.	Period over which the Average has been taken.	Average Population.			Average Yearly Deaths.			Annual Deaths to 1,000 Living.			Ratio of Deaths of 1,000 Black Troops, 1817–36.
		Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Both Sexes.	
Trinidad - - -	1816 to 1828	13,444	10,786	24,230	405	326	731	30	30	30	39·7
Tobago - - -	1819 to 1832	6,554	7,118	13,672	306	262	568	47	37	42	34·2
Demerara and Essequibo	1826 to 1832	37,949	32,475	70,424	1,299	826	2,125	34	25	30	40·6
Berbice - - -	1819 to 1831	12,029	10,093	22,122	393	295	688	33	29	31	
Jamaica - - -	1817 to 1829	168,277	170,699	338,976	4,534	3,946	8,480	27	23	25	30·0
Grenada - - -	1817 to 1831	12,371	13,147	25,518	441	406	847	36	31	33	28·4
St. Vincent's - -	1817 to 1831	12,110	12,267	24,377	413	344	757	34	28	31	36·2
Barbadoes - - -	1817 to 1829	36,310	42,491	78,801	1,142	1,095	2,237	31	26	28	46·0
St. Lucia - -	1816 to 1831	6,621	7,878	14,499	233	195	428	35	25	30	42·7
Dominica - - -	1817 to 1826	8,008	8,734	16,742	278	252	530	35	29	32	39·9
Antigua - - -	1818 to 1827	14,577	16,612	31,189	440	415	855	30	25	27	28·9
Montserrat - - -	1818 to 1827	2,986	3,479	6,465	101	92	193	34	26	30	
St. Christopher's - -	1817 to 1831	9,465	10,304	19,769	283	264	547	30	26	28	46·3
Nevis - - -	1817 to 1831	4,619	4,768	9,387	122	108	230	26	23	25	
	Total -	345,320	350,851	696,171	10,390	8,826	19,216	30	25	28	

APPENDIX LXIV.

(Given in by Dr. Balfour with reference to Qu. 9549–50.)

RESULTS of SANITARY IMPROVEMENTS in the TOWER of LONDON on the HEALTH of the GUARDS quartered there.

With a view to estimate the influence of the various improvements in the Tower of London upon the health of the Guards quartered there, the following statement has been prepared, showing, for three different periods, the amount of sickness and mortality among them, and likewise the relative prevalence of certain diseases which were the most likely to be produced by the neglect of sanitary measures.

The subjects adverted to in the answers to questions 9549-50, were the state of the ditch, the supply of water, and the defective barrack accommodation.

The Tower ditch was drained and converted into a dry ditch in the summer of 1843. The new barracks were occupied by four companies in November 1848, and the remaining companies were accommodated in them in the end of September 1849. At the latter date also the supply of drinking water from the river was stopped, and has since been obtained from an artesian well at the Mint.

These dates enable us to divide the fifteen years from April 1839 to March 1854 into three periods.

1st. From April 1839 to September 1843, during which time the troops were exposed to the emanation from the tidal ditch into which the drains of the Tower emptied their contents.

2nd. From October 1843 till September 1849, after the ditch had been dried, but while the troops were still quartered in the old and badly-constructed barracks, and supplied with water from the river.

3rd. From October 1849 till February 1854, during which period the men occupied the new barrack, and were furnished with water of excellent quality for cooking and drinking.

The following Table shows the state of health of the Foot Guards quartered in the Tower during these periods :—

Period.	Aggregate Monthly Strength.	Giving an annual Strength of	Admissions into Hospital by				Deaths by			
			Contd. Fever.	Typhus.	Diarrhœa.	All Diseases.	Contd. Fever.	Typhus.	Diarrhœa.	All Diseases.
1st April 1839 to 30th Sept. 1843 } 54 Ms.	30,019	2,502	118	150	265	2,253	2	10	–	49
1st Oct. 1843 to 30th Sept. 1849 } 72 Ms.	47,111	3,926	310	58	372	3,302	–	12	–	77
1st Oct. 1849 to 28th Feb. 1854. } 53 Ms.	36,337	3,028	171	8	252	2,424	2	7	–	48
Annual Ratio per 1,000 of Strength :										
1st Period - - -			47·16	59·95	105·9	900·5	·8	4·	–	19·58
2nd „ - - -			78·96	14·77	94·7	841·1	–	3·1	–	*19·61
3rd „ - - - -			56·47	2·64	83·2	800·5	·7	2·3	–	15·85

* This includes the epidemic cholera of 1849.

The results shown in this table are very remarkable. As regards fevers, the effect produced by the draining of the ditch was shown rather in a change of the type than in a very great reduction of their prevalence; but that change of type was attended with a marked diminution in their fatal character. The improved barrack accommodation, on the other hand, was followed by a great reduction in the amount, but a very slight effect on the already diminished mortality. This will be seen at a glance in the following table :—

	Ratio per 1,000.	Admissions.	Deaths.
1st Period	Continued fever - 47·16 Typhus - - 59·95 } 107·11	{ 0·80 3·99 } 4·79
2nd do.	Continued fever - 78·96 Typhus - - 14·77 } 93·73	{ 0·00 3·06 } 3·06
3rd do.	Continued fever - 56·47 Typhus - - 2·64 } 59·11	{ 0·66 2·31 } 2·97

Each of these changes appears to have exercised nearly the same influence upon the cases of diarrhœa and the amount of sickness generally, for the improvement has been nearly the same in each of the periods. The result would probably have been similar in regard to the mortality had not the second period included the cholera epidemic of 1849, which cut off eleven men of the Guards quartered in the Tower. If these were deducted, the ratio of deaths during the second period would only amount to 16·8 per 1,000. Or, if the months of July, August, and September, during which cholera was rife in that part of London, be entirely omitted from the returns, the relative health of the three periods would be as follows :—

	Ratio per 1,000 of Strength.							
	Admitted into hospital by				Died by			
	Continued fever.	Typhus.	Diarrhœa.	All Causes.	Continued fever.	Typhus.	Diarrhœa.	All Causes.
1st period	47·2	59·9	105·9	900·5	·8	4·	–	19·6
2d do.	80·3	14·9	76·9	814·7	–	2·9	–	17·8
3d do.	56·5	2·6	82·2	800·5	·7	2·3	–	15·8

APPENDIX LXV.

(Given in by Dr. Balfour.)

EXAMPLE of the INFLUENCE of OVERCROWDING in the PRODUCTION of FEVER among TROOPS.

" En ce qui regarde la fièvre typhoïde, le fait suivant me semble de nature à répandre un jour considerable sur l'étiologie de cette maladie. Pendant la période de 1843 à 1847 inclusivement, j'ai constaté chaque année, a l'hôpital militaire de Versailles, une épidémie meurtrière de fièvres typhoïdes sévissant vers le mois d'Octobre, exclusivement parmi les malades qui me venaient de la garnison de Saint Cloud. Cette épidémie avait ceci de remarquable qu'elle se manifestait tous les ans, huit jours après l'arrivée de l'exroi et qu'elle disparaissait immédiatement après son départ de Saint Cloud, sans atteindre jamais ni la population civile, ni les officiers, ni même les sous-officiers, bien que ces derniers habitassent la même caserne que les caporaux et soldats. Voici quelques faits capables de donner la clef de l'énigme pathogénique.

" La garnison de Saint Cloud, en temps ordinaire, le composait de quatre à cinq cents hommes et n'avait presque pas de malades ; dès que le roi arrivait, la garnison était portée à douze cents. Les hommes étaient alors entassés dans des chambres etroites et mal aérées, tandis que les sous-officiers, d'ailleurs mieux nourris et moins fatigués de service, avaient toujours au moins une chambre pour deux hommes."—*Essai sur les Lois Pathologiques de la Mortalité, par M. Boudin. Annales d'Hygiène Publique*, vol. 39, p. 379.

APPENDIX LXVI.

Recruiting Statistics of the British and French Armies.

(Prepared by the Secretary.)

The following tables are submitted with a view to show the amount of care bestowed in the selection of recruits for the army. As however they are in some respects liable to exception, it appears necessary to premise a few remarks on the nature and extent of the information which they contain.

Recruits are obtained in two different ways in the United Kingdom: 1st, by enlistment at the regiment in which the man wishes to serve; or 2d, by recruiting parties sent to different places for the purpose of raising men. By the first method the recruit having been examined, and found fit by the regimental medical officer, and approved by the commanding officer, is at once taken on the strength of the regiment; but by the second the proceeding is very different. The whole kingdom is divided into a number of districts, in each of which there is an inspecting field officer, an adjutant, a paymaster, and a staff surgeon. Recruiting parties are sent from regiments, by authority from the adjutant general, to these districts, where they are under the command of the inspecting field officer, who stations them in such towns or villages within his district as he thinks proper. When a recruit is enlisted at the head quarters of the district, he is taken, prior to attestation, before the staff surgeon, who decides as to his fitness for the army. If enlisted at any of the out-stations, the recruit is taken to the nearest military medical officer, if there is one within a convenient distance, or, if not, he is examined by a civil medical practitioner. If deemed fit by either of these, he is then attested, and is at a subsequent period taken to head quarters for approval by the staff surgeon. If considered unfit by him, the recruit is discharged with a protecting certificate, but if fit, he is sent to his regiment. Formerly recruits on joining their corps were subjected to another examination by the medical officer of the regiment, and, if objected to by him, were brought before a board who decided the question of his fitness. This, however, was found to be attended with many disadvantages, and the staff surgeon's decision is now final, unless the alleged cause of disqualification has arisen between the period of the staff surgeon's inspection and the recruit joining his corps.

No returns are made of the number of men examined by the medical officers at the head quarters of regiments, nor of those examined by military or civil medical officers at the out-stations of districts. The only available information therefore is to be found in the returns of the staff surgeons. These do not show the total number of recruits inspected for the army, but merely the numbers at the head quarters of the different recruiting districts, and unfortunately they do not distinguish between primary and secondary inspections—men enlisted at head quarters, and those previously inspected at out-stations—although the proportions rejected of the two classes must differ widely. As the relative numbers of head quarters and out-station recruits must vary greatly in the different districts, no correct deductions can be drawn from the apparent difference in the ratio of rejections, nor from the returns of the causes of rejection as illustrating the relative prevalence of different physical disabilities in different districts. The returns, however, show that a considerable amount of care is taken to prevent the admission of unsound men into the army, and it must be borne in mind that from the circumstances above noticed the proportion of rejections is understated.

During the period over which the following returns extend there were in England five districts, having their head quarters at London, Bristol, Coventry, Liverpool, and Leeds; in Ireland three, Cork, Dublin, and Newry; and Scotland, though considered one, as having only one inspecting field officer, was divided into the Glasgow and Edinburgh districts, each having a staff surgeon. The tables have been divided into two decennial periods, because in 1842 the classification of the causes of rejection was somewhat modified, and it has been thought better not to mix up the results of the two periods.

From these tables it appears that during the first decennium 298 per 1,000 of the recruits examined were rejected, and during the second period 335 per 1,000, or one third of the whole. Although many of these were rejected for causes which affected them only in a military point of view, yet an examination of the returns will show that at least one fourth were for causes which would in all probability have shortened life.

The returns enable us to show the number of primary and secondary inspections separately for six years in the Dublin, and five in the London and Edinburgh districts. Table 8 has, therefore, been prepared with a view to show the great influence which a difference in the relative proportions of these must exercise upon the general results for the district. It also shows that the proportion of these two classes varies considerably in different districts. The following are the results:

	Ratio of rejections per 1,000 examined.		Of 1,000 inspections there were	
	Primary.	Secondary.	Primary.	Secondary.
Dublin - - -	523	211	650	350
Edinburgh - -	484	130	855	145
London - - -	388	185	816	184

From these results two deductions may be legitimately drawn: 1. That in a district where the number of out-stations, and consequently of secondary inspections, is great, the ratio of rejections may be apparently small, although the number of men unfit for military service, and actually rejected as recruits, may be quite as great as in any of the other districts. 2d. That the proportion of primary and secondary inspections varies so much in different districts as to prevent any fair comparison being drawn until these two classes shall be kept distinct in the returns.

Tables 9 and 10 are annexed, showing the numbers found unfit for military service in France for a period of 13 years. They have been compiled from official documents and show the proportion deemed unfit for

military service on account of physical defects to have averaged 324 per 1,000 of the men examined, or very nearly the same as in the English recruiting districts. In any comparison, however, between them and the English returns, besides making allowance for the defects in the latter above noticed, the difference in the nature of the two services must not be forgotten. The French recruit being compelled to serve if fit, when unwilling to enter the army, has a strong inducement to feign a disability, or to exaggerate one which exists in a slight degree. The English recruit, on the contrary, being usually desirous of entering, conceals any disability, and endeavours to get himself passed by the surgeon by every stratagem which he and the recruiting party, who have a direct pecuniary interest in his being approved, can devise. In the one service, therefore, the tendency apparently is to increase the proportion of rejections, in the other to diminish it. There is also another important difference: in France the recruit is only examined once, if rejected he does not appear again; in England a recruit who is anxious to be enlisted, if rejected in one district may go to another, and, if deemed unfit there, swell the proportion of rejections by appearing in two different returns. It is true that if detected he is liable to punishment, but it is well known that it is very often done, indeed men frequently pass from one station to another in the same district, but of course that would not affect the returns from the head quarters.

1.—TABLE showing the NUMBER of RECRUITS EXAMINED at the HEAD QUARTERS of each of the RECRUITING DISTRICTS in the Ten Years 1832–41, the NUMBER REJECTED, and the RATIO of REJECTIONS per 1,000 examined.

YEARS.	LONDON.			LEEDS.			LIVERPOOL.			COVENTRY.			BRISTOL.			EDINBURGH.		
	Examined.	Rejected.	Ratio.	Examined.	Rejected.	Ratio.	Examined.	Rejected.	Ratio.	Examined.	Rejected.	Ratio.	Examined.	Rejected.	Ratio.	Examined.	Rejected.	Ratio.
1832	1,827	649	355	495	185	374	887	252	284	1,194	133	111	533	164	308	369	117	317
1833	1,738	542	312	619	194	313	954	296	310	616	80	130	356	120	337	567	223	393
1834	1,698	662	390	475	142	299	504	163	323	580	129	222	138	56	406	405	213	526
1835	2,089	747	357	382	116	303	863	333	386	601	165	274	*	—	—	497	206	414
1836	3,663	1,177	321	482	158	328	1,008	255	253	784	196	250	416	148	356	563	234	416
1837	3,875	1,444	373	612	256	418	1,277	241	189	940	226	204	753	234	311	614	272	443
1838	5,081	1,677	330	758	271	357	1,568	336	214	1,002	286	284	1,211	337	278	739	268	365
1839	7,592	1,907	251	741	198	267	2,808	804	286	2,270	540	238	1,875	487	260	1,161	426	367
1840	7,174	2,253	314	968	395	408	2,784	700	251	1,692	460	272	1,703	452	265	845	359	425
1841	6,540	2,168	331	1,440	453	315	2,221	697	314	1,526	342	224	1,317	351	266	758	287	379
TOTAL	41,277	13,226	320	6,972	2,368	340	14,874	4,077	274	11,205	2,557	208	8,302	2,349	283	6,518	2,605	398

(*continued*)

YEARS.	GLASGOW.			DUBLIN.			CORK.			NEWRY.			TOTAL.		
	Examined.	Rejected.	Ratio.	Examined.	Rejected.	Ratio.	Examined.	Rejected.	Ratio.	Examined.	Rejected.	Ratio.	Examined.	Rejected.	Ratio.
1832	*	—	—	838	388	463	500	114	228	1,613	207	128	8,256	2,209	266
1833	*	—	—	1,051	494	470	466	121	260	483	129	267	6,850	2,199	321
1834	437	191	437	590	337	571	630	151	240	389	147	378	5,846	2,191	374
1835	683	209	306	569	242	425	838	213	254	345	106	307	6,867	2,337	340
1836	1,315	457	347	1,140	329	289	893	179	200	644	192	298	10,908	3,325	305
1837	1,387	465	335	1,528	577	377	844	186	220	902	229	254	12,732	4,130	324
1838	1,543	484	314	1,613	539	334	821	171	208	1,157	221	191	15,493	4,590	296
1839	2,711	970	358	2,665	690	259	2,020	218	108	1,956	460	235	25,799	6,700	260
1840	2,188	799	365	2,210	594	269	1,652	291	176	1,185	276	233	22,401	6,579	294
1841	2,200	732	333	1,513	414	273	887	216	243	1,067	156	146	19,469	5,816	299
TOTAL	12,464	4,307	345	13,717	4,604	335	9,551	1,860	195	9,741	2,123	218	134,621	40,076	298

* No returns.

2.—TABLE showing the CAUSES of REJECTION of the RECRUITS found UNFIT for SERVICE at the HEAD QUARTERS of each of the RECRUITING DISTRICTS in the Ten Years 1832–41, and the RATIO of REJECTIONS per 1,000 examined.

CAUSES OF REJECTION.	Districts.	London.	Leeds.	Liverpool.	Coventry.	Bristol.	Edinburgh.	Glasgow.	Dublin.	Cork.	Newry.	TOTAL.	Ratio of Rejections per 1,000 examined.													
													London.	Leeds.	Liverpool.	Coventry.	Bristol.	ENGLAND.	Edinburgh.	Glasgow.	SCOTLAND.	Dublin.	Cork.	Newry.	IRELAND.	TOTAL.
	Total examined	41,277	6,972	14,874	11,205	8,302	6,518	12,464	13,717	9,551	9,741	134,621														
1. Muscular tenuity and want of physical power		1,439	99	104	170	155	250	247	278	122	295	3,159	34·8	14·2	7·	15·2	18·7	23·8	38·3	19·8	26·2	20·3	12·8	30·3	21·1	23·5
2. Unsound health		443	59	338	120	188	217	244	184	129	167	2,089	10·7	8·5	22·7	10·7	22·6	13·8	33·3	19·6	24·3	13·4	13·5	17·1	14·5	15·5
3. Traces of scrofula		230	62	71	124	79	98	127	192	53	103	1,139	5·6	8·9	4·8	11·	9·5	6·8	15·6	10·2	11·9	14·	5·5	10·5	10·5	8·5
4. Marks of treatment, as cupping, leeches, blisters, &c.		614	75	172	152	25	4	53	187	14	29	1,325	14·9	10·8	11·6	13·6	3·	12·5	·6	4·2	3·	13·6	1·5	3·	7·	9·9
5. Weakness of intellect, and cerebral disease		48	4	32	9	9	13	15	51	16	18	215	1·2	·6	2·1	·8	1·1	1·2	2·	1·2	1·5	3·7	1·7	1·8	2·6	1·6
6. Affections of the eyes and eyelids		485	50	184	169	160	92	178	170	212	42	1,742	11·7	7·2	12·4	15·1	19·2	12·7	14·1	14·3	14·2	12·4	22·2	4·3	12·8	12·9
7. Diseases or malformations of the nose or mouth		517	159	346	119	170	72	91	161	72	29	1,736	12·5	22·8	23·3	10·6	20·5	15·9	11·	7·3	8·6	11·8	7·5	3·	7·9	12·9
8. Diseases or malformations of the ears, including deafness		105	9	5	4	12	3	14	13	3	1	169	2·5	1·3	·3	·4	1·5	1·6	·5	1·1	·9	1·	·3	·1	·5	1·3
9. Small or malformed chest, and curvature of the spine		2,226	317	618	295	130	276	415	478	142	205	5,102	53·9	45·5	41·5	26·3	15·7	43·4	42·3	33·3	36·4	34·8	14·9	21·	25·	37·9
10. Irregular action of the heart, aneurism, &c.		140	27	1	5	36	9	57	32	37	34	378	3·4	3·9	—	·3	4·4	2·5	1·4	4·6	3·5	2·3	3·9	3·5	3·1	2·8
11. Hernia		607	98	148	61	112	44	72	84	16	26	1,268	14·7	14·1	10·	5·5	13·5	12·4	6·8	5·8	6·1	6·1	1·7	2·7	3·8	9·4
12. Laxity of abdominal rings, causing tendency to hernia		409	13	80	206	31	38	142	165	42	32	1,158	9·9	1·9	5·4	18·4	3·7	8·9	5·8	11·4	9·5	12·	4·4	3·3	7·2	8·6
13. Varicocele		1,096	339	269	169	143	95	288	170	86	76	2,731	26·7	48·6	18·1	15·1	17·2	24·4	14·6	23·1	20·2	12·4	9·	7·8	10·1	20·3
14. Malformation or disease of urinary and genital organs		176	32	56	33	66	157	47	82	51	32	732	4·3	4·6	3·8	3·	7·9	4·4	24·1	3·8	10·7	6·	5·3	3·3	5·	5·4
15. Syphilis.—Primary and secondary		226	53	47	54	11	29	10	47	24	8	509	5·5	7·6	3·1	4·8	1·3	4·6	4·4	·8	2·	3·4	2·5	·8	2·4	3·8
16. Hæmorrhoids, fistula in ano, &c.		70	25	—	31	8	10	6	20	9	1	180	1·7	3·6	—	2·8	1·	1·6	1·5	·5	·8	1·5	·9	·1	1·	1·3
17. Defective condition of superior extremities		355	101	121	110	145	85	206	266	70	72	1,531	8·6	14·5	8·1	9·8	17·5	10·7	13·	16·5	15·3	19·4	7·3	7·4	12·4	11·4
18. Defective condition of inferior extremities		1,826	332	629	441	293	429	743	916	248	389	6,246	44·2	47·6	42·3	39·4	35·3	42·6	65·8	59·6	61·7	66·8	26·	40·	47·	46·4
19. Varicose veins of the legs		1,383	291	425	141	187	364	709	684	236	301	4,721	33·5	41·7	28·6	12·6	22·5	29·4	55·9	56·9	56·5	49·9	24·7	30·9	37·	35·1
20. Diseases of the skin		169	56	147	32	80	109	124	50	52	21	840	4·1	8·	9·9	2·9	9·6	5·8	16·7	10·	12·3	3·6	5·5	2·2	3·7	6·2
21. Cicatrices of ulcers, wounds, burns, &c.		410	97	198	78	180	180	423	226	110	176	2,078	9·9	13·9	13·3	6·9	21·7	11·6	27·6	34·	31·8	16·5	11·5	18·1	15·5	15·4
22. Marks of corporal punishment, or of letter D.		131	29	67	27	31	29	58	64	33	31	500	3·2	4·2	4·5	2·4	3·7	3·4	4·5	4·6	4·6	4·7	3·4	3·2	3·9	3·7
23. Unclassed		121	41	19	7	98	2	38	84	83	35	528	2·9	5·9	1·3	·6	11·8	3·4	·3	3·	2·1	6·1	8·7	3·6	6·1	3·9
TOTAL REJECTED		13,226	2,368	4,077	2,557	2,349	2,605	4,307	4,604	1,860	2,123	40,076	320·4	340·	274·1	228·2	283·	297·4	399·6	345·6	364·1	335·6	194·7	218·	260·1	297·7
				24,577				6,912			8,587		—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.—TABLE showing the NUMBER of RECRUITS examined at the HEAD QUARTERS of RECRUITING DISTRICTS, and the NUMBERS found UNFIT for SERVICE, in each Year from 1st April 1842 to 31st March 1852.

	1842–3.	1843–4.	1844–5.	1845–6.	1846–7.	1847–8.	1848–9.	1849–50.	1850–1.	1851–2.	TOTAL.
Fit - - - -	14,534	11,514	9,224	11,420	19,333	13,294	10,060	7,867	7,380	9,269	113,895
Unfit - - -	6,945	6,026	4,146	5,143	7,760	6,451	6,121	5,040	4,411	5,338	57,381
Total -	21,479	17,540	13,370	16,563	27,093	19,745	16,181	12,907	11,791	14,607	171,276
Ratio unfit per 1,000 examined	323·	343·	310·	311·	286·	327·	378·	390·	374·	365·	335·

4.—TABLE showing the NUMBER of RECRUITS EXAMINED at the HEAD QUARTERS of each of the RECRUITING DISTRICTS, and the NUMBER REJECTED, in the Ten Years from 1st April 1842 to 31st March 1852.

	London.	Bristol.	Coventry.	Liverpool.	Leeds.	Edinburgh.	Glasgow.	Cork.	Dublin.	Newry.	Total English Districts.	Total Scotch Districts.	Total Irish Districts.	General Total.
Found fit for Service - -	29,912	9,262	7,481	11,777	4,863	5,800	11,012	14,300	12,296	7,192	63,295	16,812	33,788	113,895
Found unfit for Service -	16,701	4,104	2,584	6,845	3,131	3,769	7,498	3,786	6,808	2,155	33,365	11,267	12,749	57,381
Total inspected - - -	46,613	13,366	10,065	18,622	7,994	9,569	18,510	18,086	19,104	9,347	96,660	28,079	46,537	171,276
Ratio found unfit per 1,000 inspected - - -	358·	307·	257·	367·	392·	394·	405·	209·	356·	230·	345·	401·	274·	335·

5.—TABLE showing the CAUSES of REJECTION of the RECRUITS found UNFIT for SERVICE at the HEAD QUARTERS of each of the RECRUITING DISTRICTS in the Ten Years from 1st April 1842 to 31st March 1852.

	London.	Bristol.	Coventry.	Liverpool.	Leeds.	Edinburgh.	Glasgow.	Cork.	Dublin.	Newry.	Total English Districts.	Total Scotch Districts.	Total Irish Districts.	General. Total.
Total examined	46,613	13,366	10,065	18,622	7,994	9,569	18,510	18,086	19,104	9,347	96,660	28,079	46,537	171,276
I. Weak intellect	33	5	5	17	7	7	18	20	52	13	67	25	85	177
II. Unsound health, marks of treatment	1,266	322	191	408	260	456	680	145	680	225	2,447	1,136	1,050	4,633
III. Muscular tenuity, want of physical power	1,676	304	235	231	88	288	605	508	840	208	2,534	893	1,556	4,983
IV. Affections of the eyes	1,243	240	148	353	159	225	272	177	340	68	2,143	497	585	3,225
V. Loss or decay of teeth	982	160	174	239	185	79	166	110	190	13	1,740	245	313	2,298
VI. Deformity of spine	901	106	133	298	134	145	264	155	129	148	1,572	409	432	2,413
VII. Want of due capacity, or malformation of the chest	1,308	258	213	634	187	279	578	151	319	183	2,600	857	653	4,110
VIII. Defective condition of the superior extremities	566	284	106	331	173	160	311	153	295	91	1,460	471	539	2,470
IX. Hernia	847	171	72	177	103	84	203	158	73	72	1,370	287	303	1,960
X. Tendency to rupture from laxity of the groins	879	150	100	518	64	179	387	205	397	51	1,711	566	653	2,930
XI. Varicose state of the veins of the spermatic chord	1,473	340	157	600	270	201	438	68	339	79	2,840	639	486	3,965
XII. Disease or injury of the testicles	248	92	21	94	56	124	168	84	68	47	511	292	199	1,002
XIII. Varicose state of the veins of the lower extremities	1,162	279	214	1,192	339	506	1,214	480	1,032	257	3,186	1,720	1,769	6,675
XIV. Defective condition of the inferior extremities	1,532	760	339	656	375	426	915	466	742	282	3,662	1,341	1,490	6,493
XV. Cicatrices, ulcers, wounds, and chronic disease of the skin	757	189	155	344	285	330	668	468	621	138	1,730	998	1,227	3,955
XVI. Tendency to consumption	215	103	32	44	40	2	129	10	49	30	434	131	89	654
XVII. Diseases of the heart	256	38	21	112	17	76	112	106	140	55	444	188	301	933
XVIII. Impaired hearing or deafness	186	47	15	46	32	24	14	8	19	6	326	38	33	397
XIX. Impediment of speech	105	29	13	33	8	13	31	22	27	18	188	44	67	299
XX. Syphilis	295	81	81	106	120	127	174	62	140	29	683	301	231	1,215
XXI. Marks of corporal punishment	157	36	11	49	18	10	17	15	22	5	271	27	42	340
XXII. Marked with the letter D	87	22	17	41	15	13	22	5	30	7	182	35	42	259
XXIII. All other causes	527	88	131	322	196	15	112	210	264	130	1,264	127	604	1,995
TOTAL REJECTED	16,701	4,104	2,584	6,845	3,131	3,769	7,498	3,786	6,808	2,155	33,365	11,267	12,749	57,381

5.—*Continued.*

CALCULATIONS made from the preceding TABLE.

CAUSES OF REJECTION.	Ratio rejected per 1,000 examined.				Proportion by each class of causes in every 1,000 rejected in			
	England and Wales.	Scotland.	Ireland.	Total.	England and Wales.	Scotland.	Ireland.	Total.
Weak intellect	·7	·9	1·8	1·	2·	2·2	6·7	3·1
Unsound health, marks of treatment	25·3	40·5	22·6	27·1	73·3	100·8	82·4	80·7
Muscular tenuity, want of physical power	26·2	31·8	33·4	29·1	75·9	79·3	122·	86·8
Affections of the eyes	22·2	17·7	12·6	18·8	64·2	44·1	45·9	56·2
Loss or decay of teeth	18·	8·7	6·7	13·4	52·1	21·7	24·5	40·
Deformity of spine	16·3	14·6	9·3	14·1	47·1	36·3	33·9	42·1
Want of due capacity or malformation of chest	26·9	30·5	14·	24·	77·9	76·1	51·2	71·6
Defective condition of the superior extremities	15·1	16·8	11·6	14·4	43·8	41·8	42·3	43·
Hernia	14·2	10·2	6·5	11·4	41·1	25·5	23·8	34·2
Tendency to rupture from laxity of the groins	17·7	20·2	14·	17·1	51·3	50·2	51·2	51·1
Varicose state of the veins of the spermatic chord	29·4	22·8	10·4	23·2	85·1	56·7	38·1	69·1
Disease or injury of the testicles	5·3	10·4	4·3	5·9	15·3	25·9	15·6	17·5
Varicose state of the veins of the lower extremities	32·9	61·3	38·	39·	95·5	152·7	138·8	116·3
Defective condition of the inferior extremities	37·9	47·8	32·	37·9	109·8	119·	116·9	113·2
Cicatrices, ulcers, wounds, and chronic diseases of the skin	17·9	35·5	26·4	23·2	51·9	88·6	96·2	68·9
Tendency to consumption	4·5	4·7	1·9	3·8	13·	11·6	7·	11·4
Diseases of the heart	4·6	6·7	6·5	5·5	13·3	16·7	23·6	16·3
Impaired hearing or deafness	3·4	1·3	·7	2·3	9·8	3·4	2·6	6·9
Impediment of speech	1·9	1·5	1·4	1·7	5·6	3·9	5·2	5·2
Syphilis	7·1	10·7	4·9	7·1	20·5	26·7	18·1	21·2
Marks of corporal punishment	2·8	1·	·9	2·	8·1	2·4	3·3	5·9
Marked with the letter D	1·9	1·2	·9	1·5	5·5	3·1	3·3	4·5
All other causes	13·	4·5	13·	11·6	37·9	11·3	47·4	34·8
TOTAL	345·2	401·3	273·8	335·	1000·	1000·	1000·	1000·

6.—TABLE showing the NATIVE COUNTRIES of the RECRUITS EXAMINED at the HEAD QUARTERS of RECRUITING DISTRICTS in the Ten Years 1842–1851.

NATIVES OF	1842–3.	1843–4.	1844–5.	1845–6.	1846–7.	1847–8.	1848–9.	1849–50.	1850–1.	1851–2.	Total.	Ratio per 1,000.
England	12,670	10,229	7,145	9,350	11,506	5,777	5,975	4,993	4,702	6,929	79,276	462·8
Wales	216	167	141	91	171	112	125	108	140	116	1,387	8·1
Scotland	3,036	2,310	2,061	2,150	3,404	3,033	2,431	1,954	3,055	3,743	27,177	158·7
Ireland	5,301	4,650	4,009	4,945	11,968	10,799	7,623	5,821	3,853	3,791	62,760	366·4
Foreign Countries	12	17	14	27	44	24	27	31	41	28	265	1·6
Not stated	244	167	—	—	—	—	—	—	—	—	411	2·4
TOTAL	21,479	17,540	13,370	16,563	27,093	19,743	16,181	12,907	11,791	14,607	171,276	1,000·

7.—RETURN showing the OCCUPATIONS of the RECRUITS EXAMINED at the HEAD QUARTERS of the RECRUITING DISTRICTS in the Ten Years 1842–1851.

——	1842–3.	1843–4.	1844–5.	1845–6.	1846–7.	1847–8.	1848–9.	1849–50.	1850–1.	1851–2.	Total.	Ratio per 1,000.
Husbandmen, labourers, and servants	12,268	11,156	8,277	10,659	17,685	13,225	11,238	8,317	8,110	10,031	110,966	647·9
Mechanical trades	8,019	5,268	4,083	5,143	8,288	5,232	4,182	3,569	2,939	3,756	50,479	294·7
Shopmen and clerks	890	1,054	982	710	1,022	1,165	715	913	653	739	8,843	51·6
Professional occupations	56	62	28	51	74	95	23	66	45	47	547	3·2
Boys	2	—	—	—	24	28	23	42	44	34	197	1·2
Not stated	244	—	—	—	—	—	—	—	—	—	244	1·4
TOTAL	21,479	17,540	13,370	16,563	27,093	19,745	16,181	12,907	11,791	14,607	171,276	1,000·

8.—TABLE showing the NUMBER of PRIMARY and SECONDARY INSPECTIONS at the HEAD QUARTERS of the DUBLIN, EDINBURGH, and LONDON RECRUITING DISTRICTS for several Years.

			1832.	1833.	1834.	1835.	1836.	1837.	TOTAL.
Dublin	Primary	Examined	572	695	413	376	691	987	3,734
		Rejected	325	397	296	208	281	445	1,952
		Ratio	568·	591·	717·	553·	407·	465·	523·
	Secondary	Examined	266	356	177	193	449	571	2,012
		Rejected	63	97	41	34	48	132	425
		Ratio	237·	272·	232·	176·	107·	231·	211·
Edinburgh	Primary	Examined	—	494	373	390	442	563	2,262
		Rejected	—	215	211	189	216	265	1,096
		Ratio	—	435·	565·	485·	489·	471·	484·
	Secondary	Examined	—	73	32	107	121	51	384
		Rejected	—	8	2	17	18	7	50
		Ratio	—	196·	62·	159·	149·	137·	130·
London	Primary	Examined	—	1,363	1,479	1,764	2,972	3,086	10,664
		Rejected	—	463	614	677	1,069	1,305	4,128
		Ratio	—	340·	451·	384·	360·	422·	388·
	Secondary	Examined	—	375	219	325	691	789	2,399
		Rejected	—	79	48	70	108	139	444
		Ratio	—	211·	219·	216·	156·	176·	185·

9.—RETURN showing the NUMBER of YOUNG MEN EXAMINED for the FRENCH ARMY from 1831 to 1843 inclusive, and the NUMBER REJECTED for PHYSICAL CAUSES. (Compiled from the "Comptes rendus au Roi sur le Recrutement de l'Armée.")

YEARS.	Total Number examined.	Deduct rejected for Want of Height.	Remain.	Of whom rejected for Physical Defects.	Ratio per 1,000 rejected for Physical Defects.
1831	171,541	15,935	155,606	47,531	305
1832	166,305	14,962	151,343	43,908	290
1833	172,397	15,078	157,319	48,175	306
1834	171,772	14,466	157,306	48,316	307
1835	173,765	14,440	159,325	49,009	308
1836	179,317	14,843	164,474	53,788	327
1837	178,613	14,139	164,474	54,569	331
1838	174,607	13,244	161,363	51,839	321
1839	180,168	12,928	167,240	57,587	344
1840	176,778	13,865	162,913	54,066	331
1841	175,541	12,754	162,787	54,878	337
1842	180,409	13,338	167,071	58,272	348
1843	179,327	12,672	166,655	58,622	352
TOTAL	2,280,540	182,664	2,097,876	680,560	324

10.—Table showing the Number of Young Men exempted from Military Service on account of Physical Unfitness in France in each Year from 1831 to 1843 inclusive, and specifying the various Causes of Exemption. (Compiled from the "Comptes rendus au Roi sur le Recrutement de l'Armée.")

	1831.	1832.	1833.	1834.	1835.	1836.	1837.	1838.	1839.	1840.	1841.	1842.	1843.	Total.	Ratio exempted per 1,000 examined.
Total examined, exclusive of "rejected for want of height"	155,606	151,343	157,319	157,306	159,325	164,474	164,474	161,363	167,240	162,913	162,787	167,071	166,655	2,097,876	
Perte de doigts	752	647	743	672	767	760	803	810	919	806	688	804	772	9,943	4·8
Perte de dents	1,304	1,243	1,392	1,377	1,378	1,472	1,599	1,381	1,326	1,373	1,273	1,335	1,454	17,907	8·5
Surdité et mutisme	830	736	725	581	506	540	542	562	544	558	520	488	499	7,631	3·6
Perte de membres ou d'organes autres que ceux qui sont portés dans les trois colonnes précédentes	1,605	1,530	1,580	1,630	1,505	1,842	1,674	1,486	1,662	1,606	1,723	1,739	1,699	21,281	10·2
Goîtres	1,125	1,231	1,298	1,435	1,496	1,522	1,351	1,361	1,357	1,281	1,207	1,241	1,295	17,200	8·2
Claudication	949	912	1,049	963	985	927	974	772	813	769	848	794	957	11,712	5·5
Difformités autres que celles qui sont portées dans les deux colonnes précédentes	8,007	7,630	8,494	8,921	9,179	10,053	9,699	9,885	9,215	9,142	9,149	9,381	10,121	118,876	56·6
Maladies des os	782	617	667	762	541	746	643	684	712	796	768	693	733	9,144	4·3
Myopie	948	891	920	890	783	768	679	670	684	635	644	595	562	9,669	4·6
Maladies des yeux autres que la myopie	1,726	1,714	1,839	1,763	1,857	1,811	1,716	1,664	1,787	1,745	1,553	1,683	1,696	22,554	10·8
Gale	11	10	10	4	10	8	11	13	8	14	12	20	5	136	·06
Teigne	749	800	794	740	788	771	777	740	815	767	773	831	776	10,121	4·8
Lépre	57	19	29	6	54	12	16	19	7	30	24	28	23	324	·15
Maladies de la peau autres que celles qui sont portées dans les trois colonnes précédentes	937	983	895	1,031	1,073	1,424	1,304	1,231	1,215	1,174	1,493	1,687	1,255	15,702	7·5
Vices scrofuleux	1,730	1,539	1,272	1,261	1,671	1,778	1,552	1,788	1,922	1,709	1,870	2,010	2,034	22,136	10·6
Maladies de poitrine	561	423	359	417	496	679	737	761	515	491	438	476	794	7,147	3·4
Hernies	4,044	3,579	4,222	3,994	3,921	4,532	4,023	3,800	4,174	3,554	3,693	3,922	3,856	51,314	24·5
Epilepsie	463	367	342	307	277	272	276	296	304	284	252	281	275	3,996	1·9
Maladies diverses autres que celles qui sont portées dans toutes les colonnes précédentes	9,168	9,058	10,286	9,962	9,998	9,695	10,851	9,282	10,242	8,937	9,047	9,332	9,105	124,963	59·6
Faiblesse de constitution	11,783	9,979	11,259	11,600	11,724	14,176	15,342	14,634	19,366	18,395	18,903	20,932	20,711	198,804	94·8
Total	47,531	43,908	48,175	48,316	49,009	53,788	54,569	51,839	57,587	54,066	54,878	58,272	58,622	680,560	324·4

APPENDIX LXVII.

(Furnished by Sir R. Mayne, K.C.B.)

Returns relative to the Metropolitan Police Force.

1. Return showing the Number of Men admitted into the Metropolitan Police Force in the Years

1852	1853	1854	1855	1856
817	1296	1215	1092	993

2. Return showing the Number of Candidates for Employment in the Metropolitan Police Force rejected on Examination by the Surgeon and by the Commissioners in the following Years.

	1852*	1853	1854	1855	1856
By the Surgeon - -	350	509	371	361	474
By the Commissioners	433	813	1249	1303	1323

* In this year the men who had been temporarily appointed for the Great Exhibition were permanently taken into the force as vacancies occurred, consequently there were less examinations.

3. Return of the Average Strength of the Metropolitan Police Force, the Number of Cases of Sickness and Deaths among the Men, the Number discharged by being invalided, the Number who were dismissed and who resigned, with the Total Number who left the Force from all Causes in each of Five Years, viz., from 1852 to 1856, both inclusive.

Years.	Average Strength of the Force.	Number of Cases of Sickness among the Men.	Number of Deaths.	Number Discharged by being invalided.	Number Dismissed.	Number Resigned.	Total Number who left the Force from all causes, including Death and invaliding.
1852	5,603	11,069	36	194	231	636	1,097
1853	5,632	11,105	41	201	251	896	1,389
1854	5,704	11,293	52	191	189	822	1,254
1855	5,798	10,288	45	190	296	693	1,224
1856	5,834	10,443	43	224	209	703	1,179
Total - -	28,571	54,198	217	1,000	1,176	3,750	6,143
Ratio per 1,000 of strength - -		1897·	7·6	35·	41·2	131·2	215·

The specified period of sickness during which a man is allowed to be on the sick list on the authority of the chief surgeon, is not to exceed four weeks in one year, and the amount of stoppage for all ranks during this period is at the rate of 1s. per diem, unless exempted for special reasons by the Commissioner.

The chief surgeon is authorized to certify for longer periods, to be sanctioned by the Secretary of State, and these vary according to the different cases, namely, three, six, or twelve months, and the amount of stoppages during these periods are as follows:—

	s.	*d.*
Superintendents, daily - - - - - -	2	9
Inspectors - - - - - - - -	1	3
Serjeants - - - - - - - -	0	8
Constables (1st Class - - - - - -	0	7
Ditto (2nd Class) - - - - - -	0	6

unless full pay is allowed on special grounds.

If these men do not recover, and are deemed unfit for further service, upon the certificates of the divisional and chief surgeon they are recommended to the Secretary of State for gratuities, if the service is under 15 years and not less than 5 years, and for pensions if above that period.

4. Return showing the Average Number of Days Sickness per Man per Annum, in Five Years.

Years.	From Injuries.	From other Causes.	Total.	Strength of the Force at end of each Year.				
				Supts.	Inspts.	Serjts.	Consts.	Total.
1852	1·09	11·21	12·30	18	129	602	4,848	5,597
1853	1·22	11·18	12·40	18	127	613	4,866	5,624
1854	1·17	11·48	12·65	18	134	627	4,963	5,742
1855	1·91	11·07	12·98	18	139	640	5,030	5,827
1856	1·79	11·06	12·85	18	143	635	5,093	5,889
Average of the 5 years	1·43	11·20	12·63					

This average is higher than in the years from 1831 to 1845, it being for the whole of that period 9·05, the highest yearly average being in 1831, viz., 11·9, and the lowest in 1843, viz., 7·0.

No cause can be assigned for the increase above stated, nor for the decrease in the years from 1831 to 1845, as appeared by a former return.

The numbers from 1846 to 1851, inclusive, cannot be given, the returns not having been kept.

5. RETURN showing the AVERAGE per 1,000 MEN constantly sick in the whole Force for FIVE YEARS.

Year.	From Injuries.	From other Causes.	Total.
1852	2·99	30·71	33·70
1853	3·35	30·63	33·98
1854	3·22	31·46	34·68
1855	5·25	30·35	35·60
1856	4·90	30·31	35·21
For the 5 years	3 94	30·69	34·63

N.B. The word 'constantly' is taken to mean each day.

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6. RETURN showing the AVERAGE NUMBER of DEATHS per 1,000 Men, for FIVE YEARS.

Years.	Average Number.
1852	6·43
1853	7·29
1854	9·05
1855	7·72
1856	7·30
For the 5 years	7·59

The following TABLE shows the NUMBER of DEATHS from Cholera, Fever, Chest Diseases, all other Diseases, and Accidents.

Year.	Cholera.	Fever.	Consumption and other Chest Diseases	Other Diseases and Accidents.	Total.
1852	1	9	11	15	36
1853	6	9	17	9	41
1854	18	8	18	8	52
1855	0	10	19	16	45
1856	0	5	24	14	43
Total -	25	41	89	62	217

There were no deaths from Diarrhœa or Dysentery during these five years.

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7. RETURN showing the AVERAGE AGE of MEN on their Admission into the Police, and AVERAGE LENGTH of SERVICE of those who left from Ill-health during FIVE YEARS.

Years.	Average Age on Admission.	Average length of Service of those worn out, and pensioned.	Average length of Service of those injured on Duty, and pensioned.	Average length of Service of those unfit for further Service, and allowed Gratuities.	Average length of Service of those ordered by the Chief Surgeon to resign without Compensation.
1852	23·5	18·34	6·12	7·44	1·71
1853	23·6	17·19	10·62	7·08	1·55
1854	23·74	17·51	9·12	7·34	1·35
1855	23·71	17·53	8·25	8·10	1·35
1856	24·24	18·85	10·64	8·12	1·11
For the 5 years	23·76	17·88	8·95	7·61	1·41

The regulated age is under 30. With few exceptions, and those of soldiers only, none above that age are admitted. Few are admitted under 20 years, and those only on the opinion of the Chief Surgeon who examines them, and decides as to their eligibility.

Pensions are granted after a service of 15 years, and in some cases, on account of injuries received on duty, for a service of less than 15 years; and gratuities are allowed when the parties become unfit for duty (not the result of injuries) after a service of five years, and less than fifteen.

8. HOURS of NIGHT DUTY.

The hours of night duty are eight out of 24, and each man is on night duty, upon an average, eight months in the year.

9. PAY.

The pay of a serjeant is 3*s.* 6*d.* daily, or 24*s.* 6*d.* weekly.

There are two rates of pay for constables, the first 3*s.* per day or 21*s.* per week, received at present by about 1,460 men; and the second 19*s.* per week, or a fraction less than 2*s.* 9*d.* per day, received by about 3,945 men.

10. RATION.

None. But arrangements are made for the single men who reside in Section Houses to mess together.

11. COALS.

40 lbs. weekly are allowed to each married man all the year, and 40 lbs. weekly to each single man during six months, and 20 lbs. weekly during the remainder of the year.

12. CLOTHING.

One body coat, two pairs of trowsers, and two pairs of boots yearly.

One great coat and cape once in two years.

13. SPACE ALLOWED IN SLEEPING ROOMS.

The single men reside and sleep in what are called Section Houses, a space of from 450 to 500 cubic feet, or 50 superficial feet, being allowed to each man, for which a deduction of 1*s.* weekly is made from his pay.

The average number of single men residing in Section Houses during the last five years has been 1,700.

Metropolitan Police Office,
July 6, 1857.

APPENDIX LXVIII.

(Given in by Mr. Childs.)

RETURNS relative to the CITY POLICE FORCE for the Year 1856.

I.—Recruitment of the Force.

Average strength for the year 1856 -	567
Number of candidates for admission -	260
„ admitted - - -	104
„ rejected by the Commissioner (moral causes)	90
Number rejected by the surgeon (physical causes) - - - -	40
„ of men dismissed - - -	21
„ resigned at their own desire -	36
„ resigned on account of bad health - - -	12

Number resigned on reports against them	13
„ resigned or rejected on probation	12
„ retired on pensions or gratuities	7
„ dead	3
Minimum age on admission	21 years
Maximum	32 „
Average age of men admitted in 1856	25·72
Minimum height of the candidate	5 ft. 8 in.
Average height of men now forming the force	5 ft. $9\frac{3}{8}$ in.
Number of married men	415
„ of single men	128
N.B.—The men remain in the force on an average, about	4 years.

A twelvemonth's good character from the last situation is required of all candidates, and a testimonial in favour from two respectable householders, not being publicans.

Not admitted with a family of more than two children.

The single men in the force may marry when they think fit.

II.—Clothing, Pay, Rations, Barracks.

1. *Clothing.*

Two suits of clothes always in use, viz. :—

One coatee.

Two pairs of trousers of the current year.

And the like suit of the past year.

One great coat.

One cape and belt. (Truncheon and lantern.)

Three shillings per month are allowed the men in lieu of boots, of which each is required to possess two pairs in good condition.

One police hat.

A suit of plain clothes (civilian or non-official dress) must be provided by each man at his own expense.

The cost to the authorities for clothing per man per annum is	£	s.	d.
	4	5	6

2. *Pay.*

1st class	23*s.* per week.
2nd class	22*s.* „
3rd class	20*s.* „

On admission to the corps, each man undergoes a month's probationary duty ; his pay during this period is 17*s.* per week, and continues at this until certified.

3. *Rations.*

The men provide their own rations.

4. *Barracks.*

The force is divided into two divisions, viz. :—

Men living in barracks	124
Men living at home	450

The houses occupied as barracks are but ill adapted generally for such a purpose ; they have been reported on unfavourably by the surgeon.

The ratio of sick is higher amongst those who live in barracks than amongst those residing at home, in the proportion of 1,450 to 1,440.

III.—Duty.

The force is divided into a day police and a night police.

Day police is subdivided into two relays.

Day Police. 1st relay commence duty at	6 A.M.
and are relieved at	10 A.M.
2nd relay commence at	10 A.M.
and are relieved at	2 P.M.
1st relay resume at	2 P.M.
and are relieved at	6 P.M.
2nd relay resume at	6 P.M.
and are relieved at	10 P.M.
Night Police. This division of the force goes on duty at	10 P.M.
and is relieved at	6 A.M.

N.B.—All night men in barracks are supposed to be in bed at 8 A.M., and must leave it by 3 P.M. The day men are in bed by 12 P.M. At that time the lights are extinguished and absentees noted.

Absentees are fined 6*d.* for the first offence and 1*s* afterwards.

IV.—Sick Movement.

1. Number of deaths for the year 1856	3
Ratio per thousand	5·28
2. Average of the force constantly on the sick list	21·14
Ratio per thousand, constantly sick	38·8
3. Number of days sickness per man	days 13·5
4. Admissions to the sick list for the year	818
5. Ratio of admissions per thousand	1442·6
5. Average duration of each attack of sickness of actual admissions	16·6

N.B.—The amount of stoppages from the pay of the men whilst on the sick list is 1*s.* per day.

Table A.

Strength of the Force for the Year 1856 from 1st January to 31st December.

	Constables.	Sub-Inspectors.	Inspectors.	Total.
January	500	51	13	564
February	500	51	13	564
March	498	54	13	565
April	489	62	13	564
May	492	62	13	567
June	501	62	13	576
July	498	62	13	573
August	496	61	13	570
September	496	61	13	570
October	495	61	13	569
November	491	61	12	564
December	495	61	12	568

Average strength 567·83.

Table B.

Causes of Rejection of Candidates by the Surgeon.

Varicose veins	9
Various deformities of spine and feet	9
Flat footed	8
Myopia	3
Consumptive tendency	2
Weak abdominal rings	2
Syphilis and gonorrhœa	2
Muscular tenuity	2
Disease of heart	1
Vertigo	1
Seabies	1
Total	40

Table C.

Causes of Death.

Small pox	1
Old age	1
Diseased heart	1
Total	3

N.B.—No deaths from cholera, diarrhœa, dysentery or fever.

TABLE D.

Sick Movement (Daily Admissions).

—	Strength	Admissions.	Ratio per 1,000.
City Police:—			
1. Men in barracks -	131	190	1450
2. Men at home -	436	628	1440
Average -	567	818	1442·6
Metropolitan Police:—			
Troops in barracks, 3rd Dragoon Guards -	—	—	929

TABLE E.

Comparative Health of Men living in and out of Barracks.

Number living in barracks - - -	131
„ „ at home - - -	436
Strength -	567

—		In.	Out.	Total.
1856.	Resigned from ill health - -	6	6	12
	Retired on pensions - - -	—	3	3
	Died - - - - - - - -	—	3	3
	Total - -	6	12	18
	The per-centage being 3·1, or 32·8 per 1,000.			
1857.	Retired on pensions, invalided The ratio being 104 per 1,000.	7	50	57

Comparative Return of the above.

—	Residing in Barracks.		Residing at Home.	
	1856.	1857.	1856.	1857.
Number of men - -	131	131	436	409
Resigned, &c., from ill health - - -	6	*7	12	*50
Rates per 1,000 invalided, &c. - -	45·7	53·4	27·5	122·2

G. BORLASE CHILDS, F.R.C.S.,
Surgeon to the Force.

* The 57 who left the Force during the present year were pensioned, or received gratuities in consequence of being "worn out" or otherwise injured whilst in the discharge of their duties; their period of service ranging from 10 to 17 years.

APPENDIX LXIX.

(*Furnished by Mr. Childs.*)

RETURNS showing the SICK MOVEMENT in the CITY POLICE FORCE, and its Results, for Five Years.

1.—RETURN showing the Average Number of DEATHS per 1,000 for Five Years.

Years.	Average Strength of Force.	Average Deaths per 1,000.	Remarks.
1852	555	5·4	One Death by Suicide occurred in 14 Years.
1853	549	10·9	
1854	488	12·2	
1855	540	11·1	
1856	567	5·2	
Five years.	540	8·9	

2.—RETURN showing the comparative MORTALITY of the DAY and NIGHT FORCE for Five Years.

—	Average Strength for 5 Years.	Deaths in 5 Years.	Ratio per 1000.
Day force - -	313	11	35·
Night force - -	227	13	57·2

3.—RETURN showing the Number of DEATHS for Five Years, of the Men living in Barracks, and those living out of Barracks.

—	Strength for 5 Years	Deaths for 5 Years.	Comparative Result.
Men living in barracks calculated for five years.	590	3	5·8
Men living out of barracks calculated for five years.	2,110	21	10·7 nearly.

4.—RETURN showing the actual Number of DEATHS from Cholera, Fever, Small Pox, Chest Diseases, —including Consumption,—all other Diseases and Accidents, including a Period of Five Years.

Years.	Cholera.	Typhus.	Small-pox.	Consumption and other Diseases of the Chest.	All other Diseases and Accidents.	Total.	Day Force.	Night Force.	Men living in Barracks.	Men living out of Barracks.
1852	—	—	1	1	1	3	1	2	3	—
1853	—	1	—	2	3	6	2	4	—	6
1854	*1	1	—	2	2	6	4	2	—	6
1855	—	—	—	5	1	6	3	3	—	6
1856	—	—	1	1	1	3	1	2	—	3
	1	2	2	11	8	24	11	†13	3	21

* Died as a consequence of extreme imprudence on his own part.

† Two are entered as night men who were on duty for 24 hours on alternate days.

5.—RETURN showing the daily ADMISSIONS, with the Ratio per 1,000.

Years.	Strength.	No. of Cases admitted.	Ratio per 1,000 on the Admissions.
1852	555	925	1,666·6
1853	549	960	1,748·6
1854	488	994	2,036·
1855	540	849	1,572·2
1856	567	818	1,442·6
Five years.	540	909	1,684·

6.—Return showing the comparative Ratio of Admissions from Accidents, and from Disease, for Five Years.

Year.	Strength.	Admissions from Accidents.	Admissions from Disease.	Ratio per 1,000 Accidents.	Ratio per 1,000 Disease.
1852	555	74	851	133·3	1,533·3
1853	549	78	882	142·	1,606·5
1854	488	83	911	170·	1,866·7
1855	540	79	770	146·2	1,425·1
1856	567	66	752	116·3	1,326·2
5 years average.	540	76	833	140·8	1,543·5

7.—Return showing the Average per 1,000 constantly sick in the whole Force for Five Years, calculated from the Daily Sick Returns.

Average Force 540.

Year.	Total daily. Sick annual.	Daily Average.	Average per 1,000.
1852	6,994	19·16	35·1
1853	6,769	18·54	33·3
1854	8,795	23·	47·
1855	7,643	20·93	38·8
1856	7,717	21·14	38·8
For the 5 years.	7,583	20·55	38·6

8.—Return showing the average Number of Days Sickness per Man per Annum, and average Duration of each Attack for Five Years, calculated from the constantly Sick and daily Admissions.

Years.	Average Strength of Force.	Average Days Sickness per Man.	Average Duration of each Attack of Sickness.
1852	555	12·5	13·6
1853	549	12·3	12·5
1854	488	18·	16·5
1855	540	14·1	16·3
1856	567	13·5	16·6
Total average.	540	14·08	15·

9.—Return showing the actual comparative Amount of Sickness between the Men on Day Duty and the Men on Night Duty, as shown by the daily Admissions on the Sick List.

Year.	Average Strength of the whole Force.	Average Strength of the Day Force.	Daily Admissions.	Average Strength of the Night Force.	Daily Admissions.	Average daily Admissions Night Force.	Average daily Admissions Day Force.	Ratio per 1,000. Day Force.	Ratio per 1,000. Night Force.
1852	555	329	466	226	459	1·2	1·27	1,416	2,030
1853	549	324	483	225	477	1·3	1·32	1,497	2,120
1854	488	276	504	212	490	1·34	1·38	1,826	2,311
1855	540	300	435	240	414	1·13	1·19	1,450	1,725
1856	567	336	407	231	421	1·15	1·11	1,211	1,822
Total average 5 years.	540	313	295	227 nearly.	2,261	1·13	1·25	1,480	2,001

10.—Return showing the comparative Amount of Sickness, calculated from the Admissions, between the Men living in Barracks and those living out of Barracks, for Five Years.

Year.	Average Strength in Barracks.	Average Strength out of Barracks.	Admissions of Men in Barracks.	Admissions of Men out of Barracks.	Ratio per 1,000. In.	Ratio per 1,000. Out.
1852	131	324	278	647	2,122	1,996
1853	131	418	221	639	2,450	1,528
1854	131	357	337	658	2,564	1,814
1855	131	409	206	643	1,572	1,440
1856	131	436	190	628	1,450	1,440
Total -	655	1,944	1,332	3,215	10,158	8,350
Average	131	388·8	222·4	643	2,031	1,670

11.—Return showing the Influence of the Seasons on the Sick Movement in the City Police Force for Five Years, calculated from the Daily Sick Returns.

Daily Sick.

—	1852.	1853.	1854.	1855.	1856.	Total.
In 5 Januarys -	555	503	780	1,183	512	3533
„ 5 Februarys -	613	635	648	1,103	478	3477
„ 5 Marchs -	554	620	680	708	525	3087
„ 5 Aprils - -	689	609	609	572	652	3131
„ 5 Mays - -	412	358	408	636	456	2270
„ 5 Junes - -	372	320	349	453	487	1981
„ 5 Julys - -	583	474	531	495	677	2760
„ 5 Augusts -	821	551	1126	567	865	3930
„ 5 Septembers -	731	551	1121	386	684	3473
„ 5 Octobers - -	587	552	957	500	750	3346
„ 5 Novembers -	432	782	834	574	751	3373
„ 5 Decembers -	585	814	782	470	880	3531
Total - -	6,994	6,769	8,795	7,643	7,717	37,918

12.—Return showing the Sick Movement for Five Years, arranged in the Order of Amount for each.

Years.	Daily Sick.
1854.	8,795.
1856.	7,717.
1855.	7,643.
1852.	6,994.
1853.	6,769.

13.—Tabular View of the Maximum and Minimum Months of each Year.

1852.	Maximum Month	-	August	- 821
	Minimum „	-	June	- 372
1853.	Maximum „	-	December	- 814
	Minimum „	-	June	- 320
1854.	Maximum „	-	August	- 1,126
	Minimum „	-	June	- 349
1855.	Maximum „	-	January	- 1,183
	Minimum „	-	September	- 386
1856.	Maximum „	-	December	- 880
	Minimum „	-	May	- 456

II.—Recruitment of the Force.

14.—Return showing the Number of Men admitted into the City Police Force during Five Years.

1852.	1853.	1854.	1855.	1856.
116	110	179	121	104

15.—Return showing the Number of Candidates rejected on Examination by the Surgeon, and by the Commissioner, in the following Years.

Years.	1852.	1853.	1854.	1855.	1856.
Rejected by the Surgeon.	20	24	39	58	40
Rejected by the Commissioner.	108	116	119	101	90
Total -	128	140	158	159	130

16.—Tabular View of the Causes of Rejection of Candidates for Admission into the Force by the Surgeon, for 5 Years.

Causes of Rejection.	1852.	1853.	1854.	1855.	1856.
Varicose Veins -	—	1	7	14	9
Flat-footed - -	—	4	2	6	8
Hernia - -	3	3	3	2	—
Myopia - -	3	1	1	2	3
Disposed to Hernia or weak abdominal rings.	3	2	2	3	2
Muscular Tenuity -	8	6	12	5	2
Disease of Heart -	2	2	1	1	1
All other Causes -	1	5	11	25	15
Total -	20	24	39	58	40

17.—Return showing the average Age of Men on their Admission into the City Police Force, and average Length of Service of those who left from Ill-health during 5 Years.

Years.	Average Age on Admission.	Average Length of Service of those unfit fo further Servic and allowed Gratuities or Pensions (Injuries excluded).		Average Length of Service of those injured on Duty and pensioned.		Average Length of Service of those who resigned without Compensation on the Plea of Ill-health.	
		Years.	*Days.*	*Years.*	*Days.*	*Years.*	*Days.*
1852	23·81	None		None		2	15
1853	24·29	13	103	None		2	89
1854	23·88	15	85	15		1	328
1855	27·21	15	166	15		1	7
1856	25·72	9	163	7	182	-	190
For the 5 Years	24·82	10	176	7	182	1	218

For the regulations respecting age, character, pay, stoppages, rations, lodgment, clothing, hours of duty, &c.—See No. 1, given in by Mr. Childs.

18.—Return of the average Strength of the City Police Force; the Number of Cases of Sickness and Death; the Number discharged by being invalided; the Number dismissed and resigned; with the Total Number who left the Force, from all Causes, in each of the Five Years from 1852 to 1856 inclusive.

Years.	Average Strength of the Force.	Number of Cases of Sickness amongst the Men. (Admissions.)	Number of Deaths.	Number discharged by being invalided on Pensions.	Number dismissed.	Number resigned.				Total Number who left the Force from all Causes, including Deaths and Invaliding.
						At their own desire.	From bad Health.	Resigned from Reports against them.	Left Force while on Probation.	
1852	555	925	3	—*	23	59	7	8	18	118
1853	549	960	6	4*	19	82	6	14	24	155
1854	488	994	6	1*	16	36	19	4	21	103
1855	540	849	6	11*	15	42	8	17	9	108
1856	567	818	3	7*	21	36	12	13	12	110
Total Average	540	909	4·8	4·6	18·8	51	10·4	11·2	16·8	118·4
Ratio per 1000 of strength	—	1684	8·9	8·11	33·33	94·44	18·52	21·1	29·62	218·9

* Retired on Pensions or Gratuities.

G. Borlase Childs, F.R.C.S.,
Surgeon to the Force.

APPENDIX LXX.

Papers given in by W. Farr, M.D., F.R.S.

Table I.—(1.) Ages of the effective Men in the Army on March 31st, 1851 (including the Non-commissioned Officers, Privates, Cavalry, Infantry, Artillery, and Engineers).

(2.)—The annual Deaths that would happen among the effective Men in the Army, at Home and Abroad *at Three Rates of Mortality prevailing* among the *Civil Population.*

Ages.	Total Men.*	Annual Deaths at the rates prevailing.		
		In healthy Places.	In all England.	In the unhealthiest City.
All ages -	136,277	1,051	1,248	1,688
10—15 - -	310	1	1	2
15—20 - -	11,601	66	77	104
20—25 - -	50,387	367	424	512
25—30 - -	38,242	303	352	463
30—35 - -	22,099	186	226	330
35—40 - -	10,005	90	116	187
40—45 - -	3,101	31	42	72
45—50 - -	407	5	7	12
50 and upwards	125	2	3	6

* From Census Report; occupations, vol. 1, p. cccxlvi. The above numbers include the strength of the army at home and abroad.

The annual rate of mortality among the effective men of the army would be :—

7·7, or less than *eight* in 1,000, at the rate prevailing among the healthy country population of England and Wales.

9·2, or rather more than *nine* in 1,000, at the rate prevailing among the whole population of England and Wales.

12·4, or rather more than *twelve* in 1,000, at the rate prevailing in one of the unhealthiest cities (Manchester).

Table II.—Mortality of the Civil Population of England and Wales at different Ages.

Age.	Annual rates of mortality.		
	Males.		
	Healthy Districts.	England and Wales.	Manchester.
x	m^x	m^x	m^x
12—13 - -	·00,383	·00,476	·00,572
17—18 - -	·00,567	·00,664	·00,897
22—23 - -	·00,728	·00,842	·01,016
27—28 - -	·00,792	·00,921	·01,212
32—33 - -	·00,843	·01,023	·01,492
37—38 - -	·00,898	·01,162	·01,870
42—43 - -	·00,985	·01,354	·02,331
47—48 - -	·01,152	·01,615	·02,887
57—38 - -	·01,885	·02,563	·04,748

These rates were deduced from the two life tables (see Registrar General's 7th Annual Report, p. 336, and 12th Report, Appendix, p. 75), and the table for the healthy districts, not yet published.

The mortality at the above ages has been taken to represent the mortality of the troops at the ages corresponding; and thus the number of troops living at the age 20 and under 25 multiplied by the rates of mortality at the age 22-23 = the deaths that would have happened out of the troops of that age. The number of men in the return, of the age of 50 and upwards, is inconsiderable; their mortality is represented by that at the age 57-8.

Table III.

Annual Deaths per 1,000 in the Army *if* the Mortality were at the *same Rate* as it is among various classes of the labouring Population in England and Wales—*at the same Ages.*

Deaths per 1,000 in the Army, if the mortality were at the same rate as it is among	
Blacksmiths	7·7
Bakers and confectioners	8·7
Wool, cotton, and silk manufacturers	8·7
Miners, &c.	8·9
Carpenters and joiners	8·9
Grocers	9·0
Labourers, &c.	9·5
Shoemakers	9·5
Butchers	10·3
Tailors	11·5
Inn and hotel keepers, licensed victuallers, &c.	11·7

Note.—The mortality is somewhat overstated by the above numbers.

The mortality in the several trades was not determined at the ages under 20, and at the other ages 20–25, 25–35, 35–45, were the fixed periods of age in the published Tables; the above table has consequently been deduced from the following number of soldiers:—

Age.	Effective Soldiers.
20–25	50,387
25–35	60,341
35–45	13,106
	123,834
Soldiers of the age 10–20	11,911
Soldiers of 45 and upwards are not brought into the above account.	532
	136,277

Table IV.

Mortality by Consumption among the Male Population of England, at Four Ages.

Age.	Living.	Dying by Consumption.	Annual Mortality per 1000 by Consumption.
20—25	489,611	1,732	3·5
25—30	467,958	1,861	4·0
30—35	444,906	1,822	4·1
35—40	420,282	1,710	4·1
20—40	1,822,757	7,125	3·9

The above results were deduced from the population of England and Wales enumerated in 1851, and the deaths by consumption at the ages 20–25, 25–30, 30–35, 35–40 in the five years 1849–53.

APPENDIX LXXI.

(*Given in by Mr. Neison.*)

The average mortality for England and Wales (males) will be found in "Contributions to Vital Statistics," pp. 4–8.

At ages 20 to 30 the rate of mortality = 0·974 per cent. per an.
„ „ 30 „ 40 „ = 1·110 „ „
„ „ 40 „ 50 „ = 1·452 „ „

These results of course include all classes,—the invalided, the destitute, and the dissolute.

If, however, the observations were limited to members of Provident and Benefit Societies only, from which are necessarily excluded the destitute and the dissolute portion of the population, then the following are the corresponding results, and are also taken from "Contributions to Vital Statistics," pp. 20–7.

Abstract A.

Ages.	Mortality per Cent. in the following Districts.			
	Rural.	Town.	City.	3 Districts.
20 to 30	0·722	0·611	0·787	0·707
30 to 40	0·792	0·854	1·162	0·838
40 to 50	0·934	1·203	1·685	1·143

These may be considered as offering a fair type of the mortality of the really industrious classes in the respective districts. It may, however, be shown that the preceding rates of mortality, although contrasting favourably with the results, for the general population of the whole kingdom, are still greatly augmented beyond the most healthy type by the presence of some unhealthy occupations. For example, if the mortality of labourers in the rural districts be compared with the mortality of the residue of the same districts the results will be,—

Abstract B.

Ages.	Mortality per Cent. amongst		Excess per Cent. of (*b*) over (*a*).
	(*a*). Labourers in the Rural Districts.	(*b*). Residue of Rural Districts.	
20 to 30	0·600	0·824	37·333
30 to 40	0·604	0·802	32·781
40 to 50	0·826	1·042	26·150

The full effect of these differences in the various rates of mortality will perhaps be best seen by having regard to the "equation" of life, as pointed out in pages 100–1 in "Contributions to Vital Statistics."

Let this be compared for age 20.

Equation of life, age 20, England and Wales, whole population = 44·212
„ „ Friendly Societies = 47·434
„ „ Rural districts = 49·353
„ „ Labourers in do. = 52·240

It hence follows that by the preceding test the duration of life of labourers in the rural districts exceeds that of males generally in England and Wales by no less than eight years, or about 18 per cent.

On recurring, however, to the rate of mortality which actually prevails within the period of life 20—50, as shown in preceding illustrations, the deaths in the general population will be found to exceed those amongst the rural labourers, who are members of Friendly Societies, by 74 per cent., in other words,

amongst a population of rural labourers producing 100 deaths per annum no less than 174 deaths would take place at corresponding ages in the general population of this country.

The following are the results for the three decennial periods of life under review :

ABSTRACT C.

Ages.	Mortality per Cent. in		
	England and Wales, (*a*).	Labourers, Members of Friendly Societies, Rural Districts. (*b*).	Excess per Cent. of (*a*) over (*b*).
20 to 30	0·974	0·600	+62 per cent.
30 to 40	1·110	0·604	+84 „
40 to 50	1·452	0·826	+75 „

The difference here shown is remarkable, and important to be understood. The results in column (*b*) may be held as indicating a more healthy type than that of any section of the population with which scientific inquiries have yet made us acquainted.

A careful perusal of the work from which these figures are taken will show that the favourable rate of mortality amongst labourers is to a great extent accounted for by the nature of the bodily or physical exercises to which their daily avocations subject them. A striking instance of this will be found by comparing the results in the following abstract taken from page 456 of "Contributions to Vital Statistics :"

ABSTRACT D.

Ages.	Expectation of Life amongst Out-door Occupations requiring		
	Little Exercise (*a*).	Great Exercise (*b*).	Excess of (*b*) over (*a*).
20	37·8 years	43·4 years	15 per Cent.
30	30·1 „	36·6 „	21 „
40	23·0 „	29·1 „	27 „

Whenever the value of life in two classes of occupations, in which the habits and general circumstances of the persons following them differ little, except that the one is called upon for a large amount of physical exercise, and the other a comparatively small amount, it will then be almost invariably found that those habituated to a great degree of exercise are subject to a lower rate of mortality. If even the results for in-door occupations in which the differences in the degrees of exercise are much less than amongst those following out-door occupations, be compared, there will after age 40 be found a marked distinction in the group of greatest exercise, although the difference under that age is little. It is, however, the case of the out-door occupations which applies more strictly to that of the soldier, and with which he may with more propriety be compared than with an in-door and sedentary occupation.

There is a further remarkable example of the low rate of mortality in the case of railway employés, when deaths from violent causes have been eliminated.

The same distinction will be found to prevail in the rates of mortality between females engaged in "active" and "sedentary" occupations. The following figures are taken from page 462 of the work already referred to :—

ABSTRACT E.

Ages.	Mortality per Cent. amongst Females following		
	Sedentary Occupations, (*a*).	Active Occupations. (*b*).	Excess per Cent. of (*a*) over (*b*).
21 to 30	1·035	0·882	17·347
31 to 40	1·227	0·395	212·245
41 to 50	1·492	1·319	13·116
Total - -	1·159	0·834	38·980

The active occupations include charwomen and washerwomen, cooks, domestic servants, housewives, laundresses, &c., &c.

The sedentary occupations include dressmakers, lacemakers, milliners, sempstresses, shoebinders, straw-bonnet makers, &c., &c.

The preceding statements will be found to throw some light on what follows, in regard to the mortality among the troops in the united kingdom.

The last statistical report on the health of the troops, dated 31st March 1853, affords the means of comparing the actual mortality which has taken place at each term of life with that which would have prevailed had the ratio of deaths corresponded with either of the preceding standards. Among the Household Cavalry there has been the lowest rate of mortality. The following abstract shows its relation to that of the country generally, to that of the out-door occupations with great exercise, and to that of labourers in the rural districts :—

ABSTRACT F

Ages.	Number of Deaths in					
	Household Cavalry.	England and Wales.		Out-door Occupations.		Labourers in the Rural Districts.	
		No. of Deaths.	Difference.	No. of Deaths.	Difference.	No. of Deaths.	Difference.
Under 20 - -	7	6·97	0·430	6·45	8·527	5·42	29·114
20—25 - -	45	33·76	33·294	29·10	54·639	24·55	83 [illegible]
25—30 - -	26	25·16	3·338	22·51	15·504	14·19	83 2·7
30—35 - -	24	19·22	24·870	11·23	113·713	10·41	130·717
35—40 -	13	17·97	-27·657	14·32	-9·028	9·74	33·4[illegible]
40 & upwards	19	18·64	1·931	11·54	6·465	11·01	72·[illegible]
Total - -	134	121·72	10·089	95·15	40·830	75·32	77·908

The actual number of deaths among the Household Troops during the years 1837–46 will be thus seen to exceed the ratio, according to the average mortality of England and Wales, by about 10 per cent.

It likewise appears that except at the term of life 35-40 there has been an excessive mortality at all ages.

Again, applying the test of out-door occupations, the actual excess of mortality is upwards of 40 per cent. on the gross results, showing an excess of no less than 113·7 per cent. for the term of life 30-35.

In like manner, applying the test of labourers in the rural districts, the actual mortality exceeds it by 77·9 per cent., and in this instance it will be seen that at every term of life there is an excess of mortality, varying from 29 per cent. under 20 years of age, to 130 per cent. in the quinquennium 30–35.

The following are corresponding comparisons instituted in respect to the Dragoon Guards and Dragoons.

ABSTRACT G.

Ages.	Number of Deaths in						
	Dragoon Guards and Dragoons.	England and Wales.		Out-door Occupations.		Labourers in the Rural Districts.	
		No. of Deaths.	Difference.	No. of Deaths.	Difference.	No. of Deaths.	Difference.
Under 20 -	46	41·46	10·950	38·42	19·721	32·27	42·547
20—25 - -	223	157·30	41·767	135·61	64·442	114·42	94·896
25—30 -	163	113·69	43·460	101·73	60·228	64·14	154·192
30—35 - -	120	86·45	38·809	50·51	138·996	46·85	156·136
35—40 -	87	65·96	31·898	52·56	65·525	35 75	143·357
40 & upwards	66	47·46	39·064	29·40	124·490	28·03	135·462
Total - -	705	512·32	37·609	408·23	72·697	321·46	119·312

In this example it will be found that at every term of life the actual mortality has been greatly in excess of that of each of the classes with which it is compared, and the aggregate difference for this class is,—

37·609 per cent. in excess of England and Wales.
72·697 „ „ out-door occupations.
and 119·312 „ „ labourers in rural district.

The smallest difference is in every instance at the period of life under 20 years of age, and the greatest within the decennium 25–35.

The next step is to see the relation which the actual number of deaths in the Foot Guards in the years

1837–46 bears to that which would have resulted from the ratios of each of three tests now applied :—

ABSTRACT H.

Ages.	Number of Deaths in						
	Foot Guards.	England and Wales.		Out-door Occupations.		Labourers in the Rural Districts.	
		No. of Deaths.	Difference.	No. of Deaths.	Difference.	No. of Deaths.	Difference.
r 20 -	47	31·57	48·875	29·25	60·684	24·57	91·290
—25 - -	289	117·35	146·272	101·14	185·742	85·33	238·685
—30 - -	195	92·32	111·222	82·60	136·077	52·08	274·424
—35 - -	119	64·91	83·331	37·92	213·818	35·17	238·356
—40 -	101	52·27	93·228	41·66	142·439	28·33	256·513
upwards.	69	34·76	98·504	21·53	220·585	20·53	236·094
- -	820	393·18	108·556	314·10	161·063	246·01	233·320

This abstract shows the remarkably high mortality which prevails at all ages in the Foot Guards, the general results being 108·556 per cent. in excess of the average for England and Wales ; 161·063 per cent. in excess of out-door occupations, and 233·320 per cent in excess of labourers in the rural districts

It now remains to determine the results for the Infantry of the Line, which constitutes sixty per cent. of the whole body of observations in reference to the troops of the united kingdom given in the War Office Report of 1853, and for this purpose the following abstract has been prepared, and which, in common with the three preceding ones, shows for each term of life the actual number of deaths according to each of the tests applied, and the difference per cent. in each class of results :—

ABSTRACT I.

Ages.	Number of the Deaths in						
	Infantry of the Line.	England and Wales.		Out-door Occupations.		Labourers in the Rural Districts.	
		No. of Deaths.	Difference.	No. of Deaths.	Difference.	No. of Deaths.	Difference.
r 20 - -	440	250·64	75·551	232·23	89·467	195·09	125·537
—30 -	1018	501·87	103·041	432·55	135·579	364·94	179·224
—30 - -	532	278·05	98·525	248·80	121·865	156·86	251·906
—35 - -	442	237·29	86·270	138·63	218·834	128·59	243·728
—40 - -	303	166·62	81·851	132·79	128·180	90·29	235·585
upwards.	67	37·74	77·530	23·37	186·692	22·29	200·583
- -	2823	1472·21	91·752	08·37	133·620	958·06	194·658

This affords a succinct view of the relation in which the different results stand to each other.

In the War Office Report itself a comparison is instituted between the actual mortality of the army and that which prevails in twenty-four large towns in England and Wales ; but such a comparison is obviously at fault, for as I have elsewhere fully shown, and as already pointed out by preceding illustrations, the gross mortality, not only of the whole kingdom, but of individual towns and districts, is greatly increased by the inclusion of the destitute, the dissolute, and the intemperate, as well as by the presence of many persons following occupations and trades of an unusually unhealthy character. Even in the rural districts of this country it will be seen, on referring to pp. 53-59 of "Contributions to Vital Statistics," that the mortality of the sixteen trades referred to in page 58 of that work is greatly in excess of the residue of the same districts.

The military are certainly free from the noxious influences peculiar to many trades and occupations ; they do not suffer from destitution, nor can they be classed as a body with the notoriously intemperate. Every just comparison must therefore be made with some such classes as those forming the two last sections of the preceding abstracts, but even if the comparison be made with the general mortality of England and Wales (for the male sex), it will be found that the Infantry of the Line are subject to an increased ratio of mortality of no less than 91·752 per cent.

If the out-door occupations however be made the standard comparison, there is an excess amounting to - } = 133·620 per cent.

And in respect to labourers in the rural districts, the excess is no less than - } = 194·658 per cent. ;

being nearly three times the rate of mortality in this branch of the service that is found to take place amongst labourers in the rural districts at the corresponding ages.

If attention be now directed to the data furnished in regard to the Metropolitan Police Force in pp. 459–61 of "Contributions to Vital Statistics," it will be found, that although that body is compelled to discharge very irksome, laborious, and harrassing duties, still the rate of mortality to which the members have been subject is somewhat less than that for England and Wales generally. During a period of eight years (1831–8) over which the data in question extends, the actual number of deaths per annum was 32, out of an average force of 3,313 ; but if they had experienced the rate of mortality of the five following classes, the yearly number of deaths would have been,—

According to England and Wales - - - 33
„ experience of Household Cavalry - 38
„ „ Dragoons, &c. - - 45
„ „ Infantry, &c. - - 64
„ „ Foot Guards - - 70

It is difficult to understand why the troops in the United Kingdom should experience a rate of mortality differing so widely from that of the Police Force which is much exposed, and in which each constable is during two months out of every three compelled to be on night duty for nine hours each night.

From a more recent return for the Metropolitan Police Force than that just referred to, it appears that during the five years 1852—56, the

highest rate of mortality has been 0.905 per cent.
and the lowest do. „ „ 0.643 „
the average being „ „ 0.755 „

These observations extend over an average force or strength of 5,735 men, a number sufficiently great to make the results reliable for a comparison like the present one ; and if these more recent results be made the standard of comparison with the army, the contrast will be evidently still more striking than even the preceding one.

There is still another illustration of the remarkable disparity between the mortality of the army and a class of persons much exposed to active physical out-door duties, namely, railway servants. In page 448 of "Contributions to Vital Statistics" will be found some data on the vital statistics of railway employés, and from those I have deduced what would have been the number of deaths in each of the four classes of troops, if the mortality had been in the same ratio as that of railway employés :—

	Actual Deaths.	Number according to Railway Employés.
Household Cavalry - -	134	- 99
Dragoon Guards and Dragoons	704	- 417
Infantry of the Line - -	2,823	- 1,205
Foot Guards - - -	820	- 320

The data furnished in the War Office Report, dated the 31st March 1853, affords the means of solving the question, whether intemperance prevails to any serious extent in the army, or to such a degree as to materially affect the health and duration of life of the soldier.

The results of an inquiry made into the rate of mortality amongst persons of intemperate habits (see "Contributions to Vital Statistics," p. 222), show that at corresponding ages there is relatively to the deaths from all causes an excessive development of diseases of the "nervous system," and of the "digestive organs."

In England and Wales these two groups of diseases at ages 20 and upwards constitute 15·950 per cent. of the deaths from all causes at corresponding ages, but amongst intemperate persons they form 50·400 per

cent. of all the deaths which take place, or more than three times the general average. These diseases may, therefore, be regarded as the distinctive type of the causes of death among intemperate persons, and the predominance of deaths assigned to such causes in any particular collection of facts may fairly lead to the inference of irregularity of habits having prevailed to an unusual extent. A remarkable illustration of this will be found in the following results :—

ABSTRACT K.

Group of Facts.	Ratio per Cent. of Deaths from the following Causes, to the total Deaths.	
	Nervous System and Digestive Organs.	Respiratory Organs.
England and Wales, 1847 -	15·950	33·150
Gotha Life Office, 1839-49 -	23·553	27·843
Standard Life Office, 1846-50 -	30·034	22·867
Scottish Widows' Fund, 1815-52 -	34·084	21·096
Intemperate Lives - - -	50·400	22·980

An inspection of these results immediately throws suspicion on the habits of the lives assured in the "Standard Life Office" and the "Scottish Widows' Fund," but particularly the latter, the observations on which extend over a period of thirty-eight years, and those who are familiar with the usages of Scotch society during the greater part of this period may perhaps be not altogether unprepared for such a result.

It will be seen that the ratios for the "Scottish Widows' Fund," whose business until very recently was to a great extent limited to the North, hold something like an intermediate place between those for "England and Wales generally," and the "Intemperate Group."

The results for diseases of the "respiratory organs," it will also be observed, are for the whole kingdom at a maximum, and as a necessary consequence in the intemperate group at a minimum. It may hence be stated that an excessive development of diseases of the "nervous system" and "digestive organs" relatively to the deaths from all causes, indicates the prevalence of intemperate habits amongst the class of persons over whom the observations have extended.

With these remarks I shall now proceed to examine into the corresponding results for the troops of the United Kingdom. It should, however, be kept in view that the preceding figures are deduced from the deaths happening at all ages of 20 and upwards, whereas an examination of the first abstract in page 31 of the War Office Report already referred to, will show that a very small portion of the army is above the age of 40. To clear the comparison about to be instituted of any anomalies arising from differences in the distribution of observations over varying periods of life, independent results have been deduced for the precise ages in which the deaths have taken place in the army itself, and it is proposed to show the relation of these results to the corresponding ones at the same ages for the whole kingdom, the metropolis, the 24 large towns referred to in page 7 of the War Office Report of 1853, the county of Kent, and the intemperate group of lives before mentioned.

The results are as follows :—

ABSTRACT L.

Group of Facts.	Ratio per Cent. of Deaths from the following Causes to the Deaths from all Causes.	
	Nervous System and Digestive Organs.	Respiratory Organs.
England and Wales - -	13·156	44·480
Metropolis - - -	11·631	55·975
24 Towns - - -	10·375	52·079
County of Kent - - -	13·217	49·751
Household cavalry - -	11·194	58·955
Dragoon guards, &c. - -	11·051	53·908
Infantry of the line - -	10·960	57·277
Foot guards - - -	6·927	67·683
Intemperate lives - - -	50·376	27·068

Applying this test it is evident that the army may be considered quite as free from the baneful influence of intemperance as the other combinations brought into comparison, and very much more so, than the general population of the kingdom at the same ages. In fact the inferior health of the troops is not to be accounted for by the increased intensity of these diseases, and it will be observed that in the most healthy branch of the service,—the Household Cavalry,—the relative amount of deaths from causes connected with the "nervous system" and "digestive organs" is much greater than in the Foot Guards, in which the value of life is much less, and it may be further remarked that the relative freedom from these diseases in the army follows the order of decreasing health. I consider, therefore, that it may be safely affirmed that there has during the ten years 1837-46, to which the War Office Report relates, existed no serious amount of intemperance sufficient to account for any material augmentation in the general mortality.

Not only is this not the case, but the absolute rate of mortality in the Household Cavalry, Dragoon Guards, &c., and Foot Guards collectively, from these causes is very little increased beyond the normal rate compared with the remarkable increase in the general mortality of these troops when taken in the aggregate, and it will be hereafter seen in Abstract M. that in the Foot Guards, the most unhealthy of all the troops, the number of deaths which has taken place from diseases of the "nervous system" and "digestive organs" is almost identical with that which would have happened according to the intensity with which these diseases are known to affect the general population of England and Wales, as well as that of the 24 large towns, namely 51 deaths in each instance.

In the Infantry of the Line, however, although the absolute increase from these diseases is very considerable, it is still much less than the increase in the diseases of the "respiratory organs," and therefore to some degree follows in this respect the law which appears to regulate the results of the other branches of the service, namely, that the remarkable increase in the mortality of the army is not to be accounted for by any undue intensity in those diseases, which may be considered a type of intemperance and irregular habits.

A careful examination of the annexed tables, I., II., and III. will show that the great increase in deaths in the various branches of the army is due to diseases of the "respiratory organs." The "War Office" returns do not furnish data of the number of deaths which has taken place from specific diseases at various terms of life. An accurate comparison of the relation of the mortality from a given disease may, however, even in the absence of this element, be made with other results.

For example, in page 31 of the War Office Report will be found the numbers of the army exposed to the risk of mortality at various ages, and as the rate of mortality for specific diseases, at the various

terms of life is known, for various groups of observations, the number of deaths which would have happened in the army, according to the ratios of any particular class of data and disease may be easily determined, and when compared with the actual number of deaths experienced in the army will afford the means of drawing some valuable conclusions.

The following is a condensed abstract of the annexed Table II., and gives the general results for three classes of disease which form the cause of 70 per cent. of all deaths in the army.

The first comparison will be with the ratios of deaths, according to the experience of the general population of England and Wales.

ABSTRACT M.

	Number of Deaths from Diseases of the					
	Respiratory Organs.			Nervous System and Digestive Organs.		
	England and Wales.	Actual.	Diff. per Cent.	England and Wales.	Actual.	Diff. per cent.
Household cavalry -	62·870	79	+ 25·656	16·794	15	−10·686
Dragoon guards, &c.	251·112	400	+ 59·291	59·901	82	+36·893
Infantry - -	760·005	1641	+115·902	176·918	314	+77·483
Foot guards - -	203·560	555	+172·647	50·784	51	+ 0·425
Total - -	1277·547	2675	+109·387	304·397	462	+51·775

From this abstract it is evident that there is a remarkable increase of mortality from diseases of the "respiratory organs."

The mortality from diseases of the "nervous system" and "digestive organs" is also very much augmented absolutely in respect to the general mortality of the country from those diseases, but this augmentation is not to one-half the extent of that which has taken place in connexion with the "organs of respiration."

It has also been pointed out that the deaths from disease of these organs form about 60 per cent. of the deaths from all causes, while deaths arising from disease of the "nervous" and "digestive organs" constitute not quite 11 per cent. of all the deaths of the troops.

It therefore follows that if even the ratio of increase in the mortality were the same in both groups of disease now under consideration, that still the absolute increase in the number of deaths in the former group would greatly exceed that of the latter, seeing also that the ratio of increase in the "nervous" and "digestive organs" is not quite one-half of that in the "respiratory organs," there will be found an absolute increase numerically in the mortality of these organs of upwards of eight times that which has happened in the "nervous" and "digestive organs." It is hence of primary importance to inquire into the changes and fluctuations which may be taking place in the condition of that class of disease to which six-tenths of all the deaths are due.

On referring to Abstract M. preceding, it will be found that the total excess of deaths above the average for England and Wales is 1982·57, while at the same ages, in diseases of the "respiratory organs" only, it will be seen there is an excess of no less than 1,397·45 deaths, or about 70 per cent. of the whole increase.

This result deserves the most careful and patient consideration. Again on referring to the Abstract L. preceding, it will be seen that according to the mortality of England and Wales, the normal ratio of deaths from diseases of the "respiratory organs" is 44·48 per cent., and yet of the whole excess of deaths from all causes, no less than 70 per cent. is due to the "organs of respiration."

The full importance of this result will be perhaps better appreciated by the following illustration :—

Actual number of deaths from diseases of the "respiratory organs" = 2,675·0
Normal number of deaths = 1,277·6

Difference or excess = 1,397·4 = 109 per cent.

If the residue of the deaths from all other causes whatever be viewed in this manner, the results are,—

Actual number of deaths from all other causes = 1,807·0
Normal number of deaths = 1,221·8

Difference or excess = 585·2 = 49 per cent.

These results conclusively show that the condition of the army is such as to induce an excess of diseases of the "organs of respiration" with a much higher intensity than all other diseases collectively; in fact, the excess of deaths from diseases of the "organs of respiration," is considerably more than double that from all other causes.

The Abstract M. preceding, offers an interesting illustration on this subject. The various classes of troops are therein arranged according to their order of health; and an examination of the differences in the fourth column shows, that as the health of the troops deteriorates, the excess of deaths from diseases of the "respiratory organs" increases; the excess in the Household Cavalry, the most healthy branch of the service, being 25·656 per cent., while the excess in the Foot Guards, the least healthy, is no less than 172·647 per cent.

It is therefore to the physical conditions which affect these organs that we must look for a solution of the problem as to the health of the army.

Having regard to these circumstances, and keeping in view the remarkable influence on health shown to connect itself with the regular, active, physical exercise demanded of those following the more laborious industrial occupations, and also the fact of the remarkably high ratio of diseases of the "respiratory organs" found to prevail in the army, the question immediately arises whether the discipline and condition of the troops is such as to occasion that kind of physical exercise which is best calculated to produce a healthy state of the lungs. To the diseases of these organs is due the greatly increased mortality, and it is for those who are familiar with the precise details and character of the physical exercises which are undergone especially by the Infantry of the Line and the Foot Guards, to inquire whether they are not of a nature to be seriously injurious rather than beneficial to the soldier's health.

The fourth column of Abstract M. preceding, shows a frightful increase of deaths from diseases of the "respiratory organs" in these two sections of the troops. In the Household Cavalry, Dragoon Guards, &c., the ratio of deaths from the same causes is however less in a remarkable degree, but in conjunction with this important fact, that in all the cavalry regiments, the stable duties, field and parade discipline, sword exercise, &c., produce an amount of that sort of exercise which calls into action the organism of the thoracic viscera in a manner unknown to the foot soldier; who, on the other hand, when on drill and duty is too often so loaded with knapsack and other accoutrements, as to seriously constrain and hinder the free action of the organs of the chest, and consequently the greater the amount and intensity of the other and locomotive exercises to which he is subjected, the more severely do they operate against the normal condition of the organs of respiration, and hence although the foot soldier does undergo a considerable amount of one sort of exercise, it has hitherto been of a nature markedly destructive of the "respiratory organs."

The following abstract is deduced from pp. 58–63 of the War Office Report of 1853, showing that *phthisis pulmonalis* is the great scourge of the army.

Abstract N.

Ratio of Deaths from the following Causes, to total deaths from *Diseases of the Lungs*.

Disease.	Dragoon Guards, &c.	Infantry of the Line.	Foot Guards.
Pneumonia - - -	6·000	9·445	7·568
Pleuritis - - -	0·500	0·609	0·360
Hœmophysis - -	4·500	2·194	3·063
Phthisis Pulmonalis - -	76·750	75·625	86·306
Catarrhus Acutus - -	3·000	3·352	1·261
„ Chronicus - -	7·250	8·227	1·261
Dyspnœa Continua - -	0·750	0·426	—
Angina Pectoris - -	—	—	0·181
Asthma period. convul. -	1·250	0·122	—
Rate of deaths from phthisis pulmonalis, to death from all causes - - -	45·347	46·254	60·176

In the preceding abstract, it is evident that *phthisis pulmonalis* follows the same law, in respect to the whole group of diseases of the "respiratory organs," which the whole group itself has in Abstract M. been shown to follow in regard to the total deaths from all causes, being at its maximum in the least healthy troops. The results for the Household Cavalry are not given in the same complete form, and are therefore not included in this abstract.

The deaths arising from diseases of the "respiratory organs," and also from diseases of the "nervous system" and "organs of digestion," have been shown to constitute as much as 70 per cent. of the deaths from all causes in the army.

The deaths arising from each of the remaining diseases are in numerical value so inferior as not to admit of similar treatment for each, but it may be important to view their results in the aggregate. If, therefore, these three groups of diseases be excluded, namely, diseases of the "respiratory organs," of the "nervous system," and "digestive organs," the residue show the following results:—

Actual number of deaths from all other causes } = 1345
Normal number of deaths = 917·5

Difference or excess = 427·5 = 47 per cent.

This, with the preceding results, will enable any one to form a pretty correct opinion on the causes immediately operative in producing the excess of mortality in the army.

It can be shown from abundant evidence that, whatever may be the cause producing generally an excessive mortality in any particular body of men or community, it will not only show itself in the development of an inordinate number of deaths through the organism of the human frame, on the vitality of which it peculiarly presses, but its deteriorating influence will likewise be felt on other parts of the system, although not in so eminent a degree as on its own peculiar organism. A marked illustration of this will be found in the "Contributions" already referred to, on the mortality of persons of intemperate habits, as well as in the War Office Report of 1853, the contents of which are now under consideration; and hence, although all the other diseases in the aggregate show an increase of mortality beyond the normal conditions, much inferior in intensity to that affecting the "respiratory organs," such results are only the natural sequences which are in accordance with all corresponding observations, and confirm the reality of the existence of those conditions which press with extreme severity on the organism, which becomes the special cause of decay and mortality.

If any other test than the general mortality of the kingdom be applied to the state of health of the army, corresponding results to those preceding will be arrived at.

In table III. this will be found done for the metropolis, the 24 town districts, the county of Kent, and in further illustration of what has been said on the subject of intemperance, also on the intemperate group of lives.

F. G. P. Neison,
2, Waterloo Place,
Pall Mall.

Table I.

owing the Number of Deaths which would have happened at each Term of Life in the different Branches of the Army, from the following Classes of Diseases, had the ratio of Deaths been the same as in each of the five Groups of Observations specified.

Ages.	Household Cavalry.													Ages.
	England and Wales.			Metropolis.			24 Districts of England.			Kent.			Intemperance.			
	Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	
nder 20 -	·409	3·088	·279	·074	·670	·102	·446	3·581	·409	·558	2·883	·279	5·273	12·481	10·816	Under 20
to 25 - -	3·315	32·640	2·614	2·869	34·616	2·040	2·805	37·640	2·486	2·505	22·469	2·158	21·852	65·595	44·822	21 to 25
26 — 30 - -										1·664	16·588	1·815	42·302	50·723	12·581	26 — 30
31 — 35 - -	3·428	17·746	2·454	4·033	23·157	1·983	3·596	24·502	2·823	2·513	10·269	·452	26·795	14·428	12·367	31 — 35
36 — 40 - -										2·201	9·271	1·600	36·325	17·363	9·473	36 — 40
and upwards	2·416	9·396	1·879	3·349	13·593	·254	2·501	13·975	2·021	3·575	6·698	1·116	17·069	15·331	28·020	40 and upwar
otal - -	9·568	62·870	7·226	10·325	72·036	4·379	9·348	79·698	7·739	13·116	68·178	7·420	149·616	175·921	118·079	Total
ctual deaths	7·	79·	8·	7·	79·	8·	7·	79·	8·	7·	79·	8·	7·	79·	8·	Actual death

Table I.—*cont.*

DRAGOON GUARDS AND DRAGOONS.

England and Wales.			Metropolis.			24 Districts of England.			Kent.			Intemperance.			Ages.
Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	
2·436	18·380	1·661	·443	3·986	·609	2·657	21·314	2·436	3·322	17·162	1·661	31·389	74·293	64·384	Under 20
15·264	150·293	12·035	13·209	159·392	9·393	12·916	173·776	11·448	11·675 7·519	104·718 74·959	10·059 8·202	101·845 191·158	205·713 229·207	208·898 57·302	21 to 25 26 — 30
14·111	73·044	10·099	15·401	88·426	7·572	14·802	100·850	11·621	11·305 8·152	46·195 34·035	2·033 5·872	120·531 133·346	64·901 63·737	55·630 34·776	31 — 35 36 — 40
2·416	9·396	1·879	8·527	34·613	4·246	6·368	35·584	5·145	9·103	17·055	2·842	43·248	39·038	71·348	40 and upwards
34·227 45·	251·112 400·	25·674 37·	37·580 45·	286·417 400·	21·820 37	36·743 45·	331·524 400·	30·650 37·	51·076 45·	294·124 400·	30·669 37·	621·517 45·	676·889 400·	492·338 37·	Total Actual deaths

FOOT GUARDS.

England and Wales.			Metropolis.			24 Districts of England.			Kent.			Intemperance.			Ages.
Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	
1·855	13·994	1·265	·337	3·035	·464	2·023	16·228	1·855	2·529	13·067	1·265	23·899	56·565	49·020	Under 20
11·776	115·948	9·285	10·191	122·968	7·247	9·961	134·064	8·832	8·707 6·105	78·099 60·865	7·502 6·660	75·955 155·215	228·000 186·110	155·695 46·528	21 to 25 26 — 30
10·836	56·095	7·756	12·749	73·199	6·268	11·368	77·449	8·924	8·487 6·461	34·682 26·972	1·527 4·654	90·491 105·676	48·726 50·511	41·765 27·560	31 — 35 36 — 40
4·506	17·523	3·505	6·245	25·349	3·109	4·664	26·060	3·768	6·667	12·490	2·082	31·831	28·590	52·252	40 and upwards
28·973 24·	203·560 555·	21·811 27·	29·522 24·	224·551 555·	17·088 27·	28·019 24·	253·801 555·	23·379 27·	38·956 24·	226·175 555·	23·690 27·	483·067 24·	598·502 555·	372·820 27·	Total Actual deaths

INFANTRY OF THE LINE.

England and Wales.			Metropolis.			24 Districts of England.			Kent.			Intemperance.			Ages.
Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	Nervous System.	Respiratory Organs.	Digestive Organs.	
14·724	111·097	10·039	2·677	17·093	3·681	16·062	128·832	14·724	20·078	103·735	10·039	189·735	449·073	389·175	Under 20
44·279	435·979	34·912	38·318	462·375	27·249	37·467	504·100	33·209	37·239 18·388	334·007 185·325	32·083 20·060	324·840 467·508	975·093 560·663	666·294 140·141	21 to 25 26 — 30
37·458	193·903	26·809	44·069	253·028	21·667	39·295	267·718	30·848	31·029 20·593	126·795 85·974	5·581 14·833	330·827 336·839	178·138 161·003	152·689 87·846	31 — 35 36 — 40
4·892	19·026	3·805	6·781	27·523	3·376	5·064	28·295	4·091	7·238	13·561	2·260	34·561	31·042	56·734	40 and upwards
101·353 127·	760·005 1641·	75·565 187·	91·845 127·	760·019 1641·	55·973 187·	97·888 127·	928·945 1641·	82·872 187·	134·565 127·	847·397 1641·	84·856 187·	1684·310 127·	2355·012 1641·	1492·879 187·	Total Actual deaths

Table II.

the relation of the Actual Deaths in the Army to those which would have happened according to the Ratio actually prevailing in each of five Groups of Observation.

HOUSEHOLD CAVALRY.

England and Wales.			Metropolis.			24 Districts of England.			Kent.			Intemperance.		
Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	Difference per Cent.
7	9·568	− 26·840	7	10·325	− 32·203	7	9·348	− 25·118	7	13·116	− 46·630	7	149·616	− 95·321
8	7·226	+ 10·711	8	4·379	+ 82·690	8	7·739	+ 3·373	8	7·420	+ 7·817	8	118·079	− 93·225
15	16·794	− 10·686	15	14·704	+ 2·013	15	17·087	− 12·214	15	20·536	− 26·957	15	267·695	− 94·397
79	62·870	+ 25·656	79	72·036	+ 9·667	79	79·698	− ·876	79	68·178	+ 15·873	79	175·921	− 55·093

TABLE II.—*cont.*

Disease.	DRAGOON GUARDS AND DRAGOONS.														
	England and Wales.			Metropolis.			24 Districts of England.			Kent.			Intemperance.		
	Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	
Nervous System - -	45	34·227	+ 31·443	45	37·580	+ 19·744	45	36·743	+ 22·472	45	51·076	− 11·896	45	621·517	−
Digestive Organs -	37	25·674	+ 44·115	37	21·820	+ 69·569	37	30·650	+ 20·717	37	30·669	+ 20·644	37	492·338	−
Nervous System and Digestive Organs -	82	59·901	+ 36·893	82	59·400	+ 38·047	82	67·393	+ 21·674	82	81·745	+ ·314	82	1113·855	−
Respiratory Organs -	400	251·112	+ 59·291	400	286·417	+ 39·656	400	331·524	+ 20·655	400	294·124	+ 35·997	400	676·889	−

Disease.	FOOT GUARDS.														
	England and Wales.			Metropolis.			24 Districts of England.			Kent.			Intemperance.		
	Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	
Nervous System - -	24	28·973	− 17·164	24	29·522	− 18·705	24	28·019	− 14·344	24	38·956	− 38·392	24	483·067	−
Digestive Organs - -	27	21·811	+ 23·791	27	17·088	+ 58·006	27	23·379	+ 15·403	27	23·690	+ 13·972	27	372·820	−
Nervous System and Digestive Organs -	51	50·784	+ ·425	51	46·610	+ 9·419	51	51·398	− ·774	51	62·646	− 18·590	51	855·887	−
Respiratory Organs -	555	203·560	+ 172·647	555	224·551	+ 147·160	555	253·801	+ 118·675	555	226·175	+ 145·385	555	598·502	−

Disease.	INFANTRY OF THE LINE.														
	England and Wales.			Metropolis.			24 Districts of England.			Kent.			Intemperance.		
	Actual Deaths.	Expected Deaths	Difference per Cent.	Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	Difference per Cent.	Actual Deaths.	Expected Deaths.	
Nervous System - -	127	101·353	+ 25·304	127	91·845	+ 38·276	127	97·888	+ 29·740	127	134·565	− 5·622	127	1684·310	−
Digestive Organs - -	187	75·565	+ 147·469	187	55.973	+ 55·432	187	82·872	+ 125·649	187	84·856	+ 120·373	187	1492·879	−
Nervous System and Digestive Organs -	314	176·918	+ 77·483	314	147·818	+ 112·423	314	180·760	+ 73·711	314	219·421	43·104	314	3177·189	−
Respiratory Organs -	1641	760·005	+ 115·902	1641	760·019	+ 115·916	1641	928·945	+ 76·652	1641	847·397	+ 93·651	1641	2355·012	−

TABLE III.

TWENTY-FOUR TOWN DISTRICTS OF ENGLAND.

—	Number of Deaths from Diseases of the					
	Respiratory Organs.			Nervous System and Digestive Organs.		
	Twenty-four Districts of England.	Actual.	Difference per Cent.	Twenty-four Districts of England.	Actual.	Difference per Cent.
Household cavalry - -	79·698	79	− ·876	17·087	15	− 12·214
Dragoon guards, &c. -	331·524	400	+ 20·655	67·393	82	+ 21·674
Infantry - - -	928·945	1641	+ 76·652	180·760	314	+ 73·711
Foot guards - -	253·801	555	+ 118·675	51·398	51	− ·774
Total - -	1593·968	2675	+ 67·820	316·638	462	+ 45·908

METROPOLIS.

—	Number of Deaths from Diseases of the					
	Respiratory Organs.			Nervous System and Digestive Organs.		
	Metropolis.	Actual.	Difference per Cent.	Metropolis.	Actual.	Difference per Cent.
Household cavalry -	72·036	79	+ 9·667	14·704	15	+ 2·013
Dragoon guards, &c. -	286·417	400	+ 39·656	59·400	82	+ 38·047
Infantry - - -	760·019	1641	+115·916	147·818	314	+112·423
Foot guards - -	224·551	555	+147·160	46·610	51	+ 9·419
Total - -	1343·023	2675	+ 99·178	268 532	462	+ 72·047

COUNTY OF KENT.

—	Number of Deaths from Diseases of the					
	Respiratory Organs.			Nervous System and Digestive Organs.		
	Kent.	Actual.	Difference per Cent.	Kent.	Actual.	Difference per Cent.
Household cavalry -	68·178	79	+ 15·873	20·536	15	— 26·957
Dragoon guards, &c. -	294·124	400	+ 35·997	81·745	82	+ ·314
Infantry - - -	847·397	1641	+ 93·651	219·421	314	+ 43·104
Foot guards - -	226·175	555	+145·385	62·646	51	— 18·590
Total - -	1435·874	2675	+ 86·298	384·348	462	+ 20·204

INTEMPERANCE.

—	Number of Deaths from Diseases of the					
	Respiratory Organs.			Nervous System and Digestive Organs.		
	Intemperance.	Actual.	Difference per Cent.	Intemperance.	Actual.	Difference per Cent.
Household cavalry -	175·921	79	— 55·093	267·695	15	— 94·397
Dragoon guards, &c. -	676·889	400	— 40·906	1113·855	82	— 92·638
Infantry - -	2355·012	1641	— 30·319	3177·189	314	— 90·117
Foot guards - - -	598·502	555	— 7·268	855·887	51	— 94·041
Total - -	3806·324	2675	— 29·722	5414·626	462	— 91·467

TABLE IV.

ASSUMING the DEATHS in each of the seven following Classes to be Unity, the actual Deaths according to the Mortality prevailing in the Troops, will be as under:—

	Labourers, Friendly Societies.	Labourers, Rural Districts, not Friendly Societies.	Out-door trades, requiring great and little Exercise, not Friendly Societies.	Trades only partially Out-door, not Friendly Societies.	Printers, not Friendly Societies.	Police, not Friendly Societies. 1831–8)	Miners, not Friendly Societies.
Deaths per 1,000	6·055	8·002	8·538	8·449	9·090	8·922	10·314
Troops.							
Household cavalry	1·779	1·351	1·260	1·273	1·183	1·188	1·043
Dragoon guards, &c. - -	2·193	1·666	1·545	1·562	1·451	1·406	1·279
Infantry - -	2·947	2·230	2·090	2·112	1·963	2·000	1·730
Foot guards -	3·333	2·523	2·335	2·361	2·194	2·188	1·933
All the troops -	2·809	2·127	1·979	2·000	1·859	1·695	1·638

APPENDIX LXXII.

DESCRIPTION of DIAGRAMS illustrative of the NUMERICAL RESULTS in the REPORT showing the MORTALITY in the BRITISH ARMY.

(The Tables and Diagrams were furnished by Dr. Farr, F.R.S.)

Diagrams are of great utility for illustrating certain questions of vital statistics by conveying ideas on the subject through the eye, which cannot be so readily grasped when contained in figures. This aid has therefore been called in to give greater clearness to the numerical results in the body of the report and in the Appendix.

Diagrams have been prepared illustrative of the comparative health of men of the army ages in England, and of soldiers in barracks on home stations.

Likewise diagrams showing the same comparison for the whole army at home and abroad.

These several diagrams give the comparison of the life of the soldier with the life of the civilian at the same ages in time of peace.

There is another set of diagrams showing the same comparison in time of war.

Two other diagrams exhibit the chief classes of disease in both sets of diagrams. We are thus enabled better to understand how far it is within the power of preventive science to diminish the risks to which the soldier is exposed, whether at home or in the field.

Diagram A. shows the relative mortality of the foot guards and of the English male population at the corresponding ages.

Diagram A. Table A & B.

It must be remembered that the Guards are physically the very select out of the population. Any impediment or disease is enough to prevent a man being taken for military service ; and none but the strongest and best looking recruits are accepted by the Guards. The young guardsman is in every sense a "picked" life, and would be considered as a first-class life by any insurance office.

As soon as the recruit enters the service he is placed under the entire control of educated officers : his diet, cleanliness, personal habits are strictly attended to : he is lodged in barracks which have cost the country far more than was the relative cost of the house in which he was brought up : he never leaves the country in time of peace, but passes from his town quarters in London to his country quarters at Windsor or at Chichester, and whenever he suffers from the slightest ailment his medical adviser is instantly beside him : he has hospital accommodation, medicine, attendance, and every necessary comfort immediately.

One would say that of all men a soldier in her Majesty's Guards was the most likely to enjoy perfect health and long life.

The men that were rejected when the guardsman was selected have passed back into civil life. The civil population has lost a certain proportion of its good life which has gone into the army, and it has received back those lives which were not good enough for the army. The civil population has had all the loss, the army all the gain.

Let us now see how the Guards die off under the, apparently, very favourable circumstances mentioned.

Diagram A. consists of alternate black and red lines of different lengths. The black lines show the proportion of deaths per annum among 1,000 of the civil population for each five years from 20 to 40. The red lines show the proportion of deaths per annum among 1,000 Guards for the same ages. The excess in length of the red line over the black line in each pair of lines shows the excess of deaths among the Guards. There is, however, an important difference between the relative value of the black and red lines which must be noticed, otherwise the mortality in the Guards, great as it is, might appear less than it really is. The black line exhibits all the deaths in the civil population which occur between the ages of 20 and 40, but the red line does not exhibit all the deaths which occur *among the men who had been selected for the Guards.* Every year between the ages of 20 and 40, men are rendered unfit for service by organic disease, and are discharged to die among the civil population and to raise its rate of mortality. These are included in the black line, and are consequently not shown in the red line. These deaths are in fact deducted from the length of the red line and added to the length of the black line, so that in the comparison the Guards have a double advantage from their men who die invalided.

The Guards, though the most unhealthy corps on the home service, is not the only one which suffers a great excess of mortality. All the army on home service suffers, though in a somewhat less proportion.

This is shown in Diagram B., where the black lines again exhibit the mortality among the general English population, and the red lines the mortality among soldiers on home service. The excess of length in the red lines shows the excess of mortality among the troops, subject to the same correction as to invaliding as has been already mentioned for the Guards.

Diagram B. Table A & B.

The whole army, like the Guards, consists of carefully picked lives. To show the full bearing of this fact in any comparison between the health of the army and that of civilians, it is necessary to state that, of the civil population at the recruiting age, a certain part is unable from illness to present itself to the recruiting officer : that deaths among that part go to raise the civilian mortality : that of those who do present themselves for recruits, a third part at least, though probably a much larger proportion, are rejected as unfit for service : that of those rejected at least a fourth part are suffering from diseases which shorten life. The lives rejected are thrown back into the general population ; but notwithstanding this process of selection and the apparently favourable circumstances under which the troops are placed, we have from some cause or other the extraordinary results exhibited by these diagrams.

The wide extent of the British Empire, and the great variety of climates it presents, as well as the topographical peculiarities of our various colonies and possessions scattered over the whole earth, would lead us to expect a higher rate of mortality among soldiers born in the British Islands, when these soldiers are sent on service abroad, than would exist among the home population at the same ages.

Diagram C. Tables C—*a*, C—*b*.

This difference is represented in Diagram C., which exhibits the mortality among Englishmen of the army ages, living in healthy districts, and the mortality of the whole army at home and abroad for the same period, subject to the same correction for invaliding.

Diagram D. shows the same fact with regard to the army and the general male population of England at the army ages.

Diagram D. Tables C—*a*, D.

In some years it will be found that the mortality in the troops is from 5 to 6 times greater than it is in civil life, as represented on Diagram C.

These facts are represented in another way in Diagram E., each parallelogram of which represents the total sum of life among 10,000 men, between 20 and 40 years of age, entering the army and remaining on home service, and among the same number of Englishmen taken, first, all over the town and country districts, and, secondly, in the healthy districts at home at the same ages. The left-hand line of each parallelogram shows that all start alike ; but the black wedge, which represents the progress of death among the various classes, it will be observed has a very different slope in each separate parallelogram.

Diagram E. Tables E—*a*, E—*b*.

The proportion of death increases and that of life diminishes, in a very different ratio and to a very different extent in each.

The mortality is greater, and its progress more rapid among the English male population generally than among that in healthy districts.

The general population has lost a third more by the time it arrives at the age of 40, than the healthy population has, while the soldiers have lost above a third more of their numbers than the general population, and more than twice as many as the healthy population.

Each parallelogram also represents the total money value of 10,000 men between the ages of 20 and 40, as well as the loss of value from loss of life at each succeeding year between the two ages. It further shows the relative value of the amount of life in the army as contrasted with that of two classes of civil population, passing on from 40 years to the succeeding period of life, from which it will be seen that while among healthy civil populations about 8,500 lives out of 10,000 survive the wear and tear of the ages between 20 and 40, and thereafter add their quota to the wealth of the community, only 6,900 of the army lives are available for the same purpose.

It may be said that the nation loses the money value of the excess of mortality existing in its general population over that of the population in healthy districts.

In the case of the army, the country incurs great expense in educating the soldier for his duties, and it is difficult to estimate the value of a good soldier, for he can hardly be replaced. In the present state of sanitary knowledge, it may be fairly stated that the whole excess of money loss between that in healthy districts and that in the army, as represented by the difference in area of the black wedges, might be saved to the tax-payers of the country. The general community incurs a still further loss of productive labour, because it will be seen that the number of lives at 40 years of age returned into the general civil population (supposing that the average age of discharge from service is 40 years), is much smaller in the army than the proportion which survives in the healthy civil population ; and the productive power of the country is further taxed for the support, by poor-rates and otherwise, of a large proportion of men, temporarily or permanently disabled by diseases contracted in the service.

The loss from invaliding has been already referred to as a serious cause of inefficiency in the army not shown in any of the preceding diagrams. Diagram F. has been constructed from Tables F—*a*, F—*b*, F—*c*, and F—*d*, to bring under one view the whole loss sustained. This is shown in No. I., on which the black wedge represents the deaths, the yellow wedge the loss from invaliding, and the two wedges conjoined the total loss from both causes in an army of 200,000 men between the ages of 20 and 40. No. II. represents what the loss would be if the army were as healthy as the civil male population, and by comparing the red areas of both diagrams the great loss of efficiency in the army in its present state becomes more apparent. Under the present system No. I., 10,000 annual recruits would be required to sustain a force of 141,764 men, while under the improved conditions as to health indicated on No. II., 10,000 annual recruits would sustain an army of 166,910 men.

These diagrams then show the loss of life, of service, and of money value entailed on the country by the neglect of sanitary measures in the army in time of peace.

It is in the highest degree important to show the classes of disease from which the great losses in the army in time of peace arise, for it is in this way alone that we can ascertain whether, and to what extent, we can mitigate or prevent these diseases by known sanitary precautions.

The two parallelograms on Diagram G. represent the classes of mortality from disease most prevalent in the infantry on home-stations, as compared with the extent of the same types of disease in civil life at the same ages.

The excess of length in the army parallelogram shows the total excess of mortality in the infantry over that in the civil population.

We are at once struck by the remarkable fact that more than seven-ninths of the mortality in the infantry are due to two classes of disease alone,—namely, to zymotic diseases, such as fevers, cholera, diarrhœa, and to chest and tubercular diseases, such as consumption, &c.

In fact the mortality from chest and tubercular diseases alone, in the infantry on home service, exceeds the total mortality from all causes among the civil population at the same ages ; while the deaths from zymotic disease are above double what they are in civil life. Again, chest and tubercular affections are the scourge of the civil population, and yet the civil population suffers less than one-half the mortality from these diseases that occurs in the infantry, while the deaths from zymotic disease in the infantry nearly equal the total deaths from chest affections in the civil population. It is necessary here also to repeat that while the area in Diagram G. representing the mortality of the English male population, exhibits all the deaths from each class of diseases, the area representing the infantry mortality does not. It takes no account of men discharged by reason of chronic, tubercular, and chest diseases, whose deaths, taking place after discharge among the civil population, go to swell the mortality from these diseases, such as it is shown in the area which represents the civilian mortality.

These diagrams, then, exhibit clearly the frightful mortality continually going on in the British army, and the classes of disease to which this mortality is to be attributed.

The first question which arises on looking at these diagrams is,—what can be the cause of all this ? By what possible procedure can it be that the élite of the British working population can be so guided as that such a result shall follow ? Is there anything in the food, clothing, duties, habits of the men to which it can be attributed ? Are the army medical men less skilful in their profession than those in civil life ? To every such query we must reply that there is, on the contrary, everything in the soldier's favour in these particulars, except, perhaps, that he is not sufficiently worked. His barrack accommodation has cost the country enough of money. There has been no expense spared in that. Can there be anything there to occasion such fearful annual loss of life ?

Let us see what sanitary experience teaches as to the causation of the diseases from which the soldier suffers.

1st. *Consumption and diseases of that class* are the result of breathing foul air contaminated by the breath of other persons. It is air polluted in this way which appears to be the special agent which predisposes people to consumptive diseases. How is such a state of the air chiefly produced ? Very easily :—simply by crowding too many people into unventilated rooms, especially into sleeping-rooms.

If barrack-rooms are crowded and unventilated, and if the atmosphere is close or foul during the hours of sleep when the system is more peculiarly predisposed to its effects, then you have the elements of consumption and tubercular disease. If you want to develop the seeds into activity, all you have to do is to take the men out of such an atmosphere which they have been breathing night after night, and expose them on guard to wet and cold, and the disease will soon develop itself.

But mark,—exposure to wet and cold alone will not do it. The Crimean experience proved this ; and so it is found to be daily and nightly, in night trades and occupations, except in the case of the soldier.

To know whether the conditions requisite to produce consumption and tubercular disease exist in barracks, it is only necessary to read the disgusting evidence given before the Barrack Committee, and the statements in this Report on the subject, or simply to consult the tables in the Appendix showing the amount of cubic space allowed to the men in barracks, and to the sick in military hospitals. It would be

difficult to frame conditions more likely to generate such diseases than those to which soldiers are exposed in barrack-rooms. They are in fact the self-same conditions as have been determined by direct experiment to be necessary for the production of tubercular disease in animals.

When a sufficient cause is found it is not necessary to look for another.

2nd. *Zymotic diseases*, namely, *fevers*, *diarrhœa*, *cholera*, *dysentery*, *&c.*, are known in civil life to be most intense in their activity where certain local conditions are present—

First in prominence amongst these conditions, we have again overcrowding and defective ventilation,—the repeated breathing, in fact, of air already breathed, such air being further contaminated by moisture and exhalations from the skin.

Next we have emanations proceeding from animal excretions, or from decaying vegetable matter together with moisture. The want of drainage and the foul state of the latrines and urinals in many barracks, as described in the Report, are sufficient illustrations of this class of causes.

There are others of minor importance which need not be mentioned. Those enumerated are quite sufficient to account for most of the excess of zymotic mortality from which the army on home-stations suffers. If men returning from foreign service happen occasionally to be more susceptible to the operation of such causes, they will of course suffer more severely; but allowance is made in the diagrams for even this contingency, as they do not exhibit any deaths occurring for the first six months after men have returned from foreign service.

The next query is one which it is almost superfluous to put. It is whether there be any known means of diminishing this excessive mortality; and whether there be any hope of reducing the lines of disease and mortality among the troops, as exhibited in these diagrams, to the same length as the lines for the civil population?

The reply is, that the line of the soldier's mortality on home service should, to say the least of it, never have been longer than that of the civil population, and that it might be shorter. The parallelogram showing the mortality and disease among the civil population on Diagram G., is the very one towards the reduction of which to smaller dimensions the whole sanitary procedure under every sanitary Act of Parliament is directed. It was the large dimensions of such parallelograms that led to the agitation which ended in the legislature giving a sanitary code to England. And it is hardly credible that it should be necessary at the present day to advocate similar measures for the army.

There is no reason why with proper sanitary measures the general health of the population should not be raised to the standard of the most healthy districts of the country, as indeed it has been in certain marked instances. And why should the health of the army on home service be any exception, seeing that the personal conditions of the soldier are so much more favourable? If this were done, and if our home army consisted of 100,000 Guards, we should save nearly 1,500 good soldiers per annum, who from all experience in other cases are as certainly killed by the neglects specified as if they were drawn out and shot.

By referring back to Diagrams C. & D., which represent the army mortality at home and abroad, as compared with that of an English population at the same ages, we cannot fail to be struck with the immense loss of life entailed on the army, and the corresponding cost to the country from foreign service. This loss is much less than it was in former times. It has been diminished by various sanitary means; and there is no reason whatever, why, if intelligent inquiry were instituted, and proper sanitary precautions taken, all the lines of army mortality on those melancholy tables might not be materially shortened.

Unfavourable as those diagrams are to the sanitary system, or rather want of system, in the British army, they exhibit results which might be considered as in the highest degree favourable when contrasted with the mortality from disease among the British troops in time of war.

It is at such times that the excessively defective state of sanitary science and practice in the army becomes pre-eminently remarkable, and leads to the most disastrous results. It is right, however, to state that such defects are not confined to the British army. All armies during war have suffered from the neglect of very ordinary hygienic precautions, and some armies have been all but destroyed in consequence. Nearly sixth-sevenths of the vast army with which Napoleon the First invaded Russia had perished, or ceased to be effective before the setting in of the fierce cold which destroyed the remainder.

The actual losses in battle form a very small part of the calamities of a long war, so much so, that if the excess of mortality caused by disease could be cut off, the loss in action, would be hardly worthy of remark in the comparison.

The facts connected with the disastrous Walcheren expedition, as well as the ignorance and absence of the most ordinary precautions which led to so great a loss of life, are matters of history. But up to the present time the experience of that expedition appears to have led to no beneficial result, so far at least as can be gathered from the still more disastrous Crimean war.

The linear Diagram H. gives the comparative results of the mortality amongst the English male population of the army ages, and amongst the soldiers of the British army in the East. The first short black line gives the mortality from all causes among the English population. The second long red line, nearly twenty-three times the length, gives the mortality in the army. For every Englishman of the army ages who died at home, nearly twenty-three died in the East. The proportion of deaths from wounds, exclusive of those killed on the field, during the war, was thirty times greater among the soldiers than among the civil population; but even at that rate the mortality in hospital from wounds did not exceed 3 per cent. of the force, while the deaths from all causes were nearly 23 per cent. of the force in the field, Diagram H. Tables H—*a*, H—*b*.

When we examine the cause of this great mortality, the eye is arrested at once by the second long red line marking the zymotic deaths. The short black line immediately above it shows the corresponding mortality from zymotic diseases among the home male population at the same ages.

We learn from these two most instructive lines, that for every man of the ages and numbers who died at home from zymotic maladies, 93 died in the army in the East! The remaining diseases shown in the diagram are not worth notice. If they were all expunged, and the deaths from wounds taking place in hospital expunged with them, the fact would remain that the army in the Crimea almost perished from zymotic disease.

The awful mortality in that noble army is shown still more strikingly by Diagram I. For the sake of comparison, the town of Manchester, one of the most unhealthy in England, and one very subject to zymotic diseases, has been selected. The small black disc in the centre shows what would have been the mortality of the Crimean army, had it had been as healthy as Manchester. Now contrast with this the great black bat's wing on the right-hand of the diagram. The whole of that black area outside the small innermost circle shows the excess of mortality in the army over that of one of the most unhealthy towns in England. Diagram

The diagram is in two parts. The right-hand part shows the mortality of the army during the first twelve months of the war from April 1, 1854, to March 31, 1855.

It shows how healthy the army was when it landed in the East. By comparing the dates, it will be seen

that, immediately on the army reaching Varna, sickness and death began to increase, showing the sudden exposure of the troops to some very unusual causes of mortality. It will be seen, that the whole time the army was in Bulgaria, it suffered severely—that the mortality declined when it left that pestiferous region for the Crimea—that from the moment it broke ground before Sebastopol, in a comparatively healthy district of country, the mortality began to rise during October—that it progressed with frightful rapidity during November and December, attaining, during January 1855, an amount greater than the maximum of the mortality of the great plague of London in September 1665.

The diagram gives a pictorial representation of that great Crimean calamity during the first year of the war. Except, perhaps, in one or two of the mediævel epidemics, no pestilence of which we have any record would form such a picture for eight consecutive months.

The left-hand diagram gives the mortality of the second year of the war. It was great, as will be seen by constrasting its black irregular surface with the small Manchester circle, but when compared with the first year's mortality it is insignificant. It will be seen that for the last three months (but in reality for the last six months, January to June 1856 inclusive) the mortality retires within the Manchester circle and all but disappears. We have here at a glance the vital statistics of the Crimean war.

The immense preponderance of zymotic diseases has been already referred to, and a glance at Diagram K. will show that these diseases were the cause of the whole catastrophe. The total mortality from wounds at Alma, Inkermann, and during five months in the trenches, exclusive of the killed in action, is all comprised in the small pink cone in the centre. The small black patch adjacent comprehends the total mortality from diseases not zymotic. The irregular blue surface, like the tail of a portentous comet, shows the zymotic diseases, the pests and scourges of camps and armies now, as they were of cities and towns in the middle ages, before the dawn of sanitary knowledge.

The analysis of the second year's mortality is given on the left-hand circle of Diagram H. It exhibits an immense reduction in the deaths from all causes except from wounds, the legitimate result of war; but even to the end the zymotic mortality retains its preponderance, and only disappears when the army had arrived at its most healthy condition.

On comparing the total mortality as shown on Diagram I. with the zymotic mortality in Diagram K., it will be seen that the very first diseases from which the army suffered (as shown by the dates) in Bulgaria were zymotic diseases. They were principally fever and cholera, brought on by neglect of sanitary precautions chiefly in the first bad selection of camp sites. The first outbreak began to subside only in September, and continued to decline until the army sate down before Sebastopol. Another and far more terrible invasion of zymotic disease followed that event.

The men were hard worked, but hard work by itself never induced zymotic disease. We must look for other causes, and these causes once existing, fatigue would co-operate powerfully with them. The men had no sufficient shelter. They were in want of clothing suitable to the weather. They suffered from wet and damp. They were exposed to the elements at all times and seasons. Their food was not sufficiently nutritious nor varied. They had no proper means of cooking, and little or no fuel, and they could not eat their rations. What wonder, then, if their very blood got into a disordered state, and zymotic maladies broke out among them? Scurvy and scorbutic diseases appeared at a very early period. Fever, cholera, diarrhœa, dysentery increased, so as to threaten the total destruction of the force. The requirements of hygiène had been disregarded, and these diagrams show the natural results.

During the summer of 1855, as shown on the left-hand diagram, zymotic diseases still prevailed, though to a comparatively insignificant degree. Sanitary defects in draining, cleansing, and ventilation, and over-crowding were then the prevailing causes of attacks. During the winter of 1855–1856 all the previous causes of disease had been removed. The men were well clothed, fed, and sheltered. Their huts were properly drained and ventilated, and nuisances had been removed. The hard work had also ceased.

Compare, then, the right with the left-hand diagram from the months of September to April; and no more instructive lesson on army hygiène could be given. The men were the same, the conditions only had been altered. The requirements of nature had been disobeyed in every particular during the first winter, and she has left on that diagram an everlasting vindication of her broken laws. During the second winter, nature had been more perfectly obeyed, and the stigma of her displeasure has almost ceased to appear.

In discussing the causes of the terrible mortality of that fearful winter, we must not overlook another important point, namely, what chances a sick man had of proper care and treatment.

The medical staff, it is known, exerted itself to the very utmost, and incurred a large proportionate mortality among its members in consequence. But the accommodation for the sick in camp was for several months most defective. There were no proper hospitals, and no suitable beds or other appliances. The suffering from exposure among the sick was perhaps greater, considering their diseased state, than among the army generally.

The transport-ships were most defective at first, over-crowded and badly ventilated, and, moreover, many cases were shipped in an unfit state for removal, particularly cases of choleraic disease. There was a great mortality on board the ships in consequence. During the period of $4\frac{1}{2}$ months from the landing in the Crimea, to the end of January 1855, out of 13,093 sick shipped for Scutari, 976 died on a passage of only 300 miles, which is 75 per thousand. In January 1855, there were actually lost on the passage 10 to every 100 received alive. Of those who landed, two were lost out of every five treated in the hospitals of the Bosphorus, during the month of February, and one out of every two at Koulali, the worst of all the hospitals; for, when the sick arrived they were crowded into buildings which had undergone no sufficient sanitary preparation for their reception. The drainage, ventilation, lime-washing, and other arrangements were so defective that the buildings were little better than pest-houses, and the result was, an enormous and needless mortality among the sick, which went to swell the losses of the army, and to raise its proportionate rate of mortality.

The Scutari mortality was in fact a separate problem and must be considered by itself. It was the case of thousands of sick removed 300 miles from the causes which had occasioned their disease, and exposed to another class of risks in the buildings into which they were received. The buildings were spacious and magnificent in external appearance; far more so indeed than any military buildings in Great Britain; and several of them to all appearance were better suited for hospitals than any military hospitals at home.

The mere external appearance was, however, fatally deceptive. Underneath these great structures were sewers of the worst possible construction, loaded with filth, mere cesspools in fact, through which the wind blew sewer-air up the pipes of numerous open privies into the corridors and wards where the sick were lying.

The wards had no means of ventilation, the walls required constant lime-washing, and the number of sick placed in the hospitals during the winter was disproportionately large, especially when the bad sanitary state of the buildings is taken into consideration. The population of the hospitals was increased, not only without any sanitary precautions having been taken, but while the sanitary conditions were becoming

daily worse, for the sewers were getting more and more dangerous, and the walls more and more saturated with organic matter. Some slight improvements were made in the beginning of March 1855, but it was not till the 17th that effectual means were put into operation for removing the causes of disease in the buildings. By the end of June the improvements were nearly completed, and the proportion of sick had fallen off.

Diagram K. Table K, fig. 2.

The small diagram (fig. 2) on Diagram K. shows the whole history of that frightful Scutari calamity. It exhibits the annual rate of mortality *per cent.* on the sick population of the hospitals. It will be observed that even from the very commencement of the occupation of these buildings in October 1854, and before the sufferings of the winter had begun, the mortality was very high, although the number of sick was small, indicating the unhealthy state of the buildings from the very first. Nothing was done to improve them even then; only fresh shiploads of sick were passed into them. The mortality of course continued to advance. Still nothing was done. Then came the great Crimean catastrophe, and ship after ship arrived with sick in so suseeptible a condition that the foul air of these hospitals was almost certain death to them, and accordingly, as the diagram shows, they died, in the month of February, at the rate of 415 per cent. per annum. In 12 months at such a rate the whole sick population of the hospitals would have perished four times.

The reduction in the mortality after the sanitary works were begun is most striking, and it falls eventually in June 1855 to less than a sixth part of what it was when the barrack and general hospitals were occupied together in October 1854, and to a nineteenth part of what it was in February 1855. Our general hospitals have been so deplorably mismanaged in all our wars that the question has been raised as to whether it would not be better to do without them altogether. The experience of Scutari, as shown on the diagram, proves that general hospitals may become pest-houses from neglect, or may be made as healthy as any other buildings.

The question of these zymotic diseases is of infinitely greater importance during war than during peace, for no weapons are so destructive of armies in the field as they are. The slaughter of battles and sieges is cast into the shade by that of pestilence, which during long wars is the real arbiter of the destinies of nations, for it exhausts their resources more completely than all other losses in the field.

In a country like ours with a limited population, an entirely voluntary system of recruitment, and colonies and possessions in all climates and latitudes, the question of military hygiène is rapidly becoming a question of vital importance to the interests of the empire. Upon the British race alone the integrity of that empire at this moment appears to depend. The conquering race must retain possession. Experience has shown that without special information and skilful application of the resources of science in preserving health, the drain on our home population must exhaust our means. The introduction, therefore, of a proper sanitary system into the British army is of essential importance to the public interests.

The Crimean experience has proved the whole case, both as regards the disastrous results of defective administrative arrangements, and the possibility of foreseeing and obviating similar evils in future.

And it has, moreover, shown that, with troops like ours, whose bravery and uncomplaining endurance of hardships the most severe and fatal, have been the admiration of the world, England has nothing to dread but the results of her own inexperience and want of foresight.

Diagram Z.

Illustrative of the Quartermaster-General's Regulations for Encampments.

Diagram Z. Table Z.

Diagram Z. is introduced to illustrate an important sanitary principle in camping troops, viz., the relative density of the population of a camp according to the number of tents pitched on a given area of ground.

The Quartermaster-General's "Regulations for Encampments" of 11th May 1853, contain three plans for encamping a battalion 850 strong.

In plan No. 1, 60 tents are arranged in 10 lines of 6 tents to a line. Four of the lines are double, and there are two single lines.

Plan No. 2 shows a "compressed" order in which the tents are arranged in 10 double lines of three tents to a line.

Plan No. 3 has the tents arranged in 10 equidistant lines of six tents to a line.

Fifteen men are allotted by the regulations to each tent.

The occupied area in Plan No. 1, measured from the outer margin of the tents, is $210 \times 36 = 7{,}560$ square yards.

In plan No. 2, it is $220 \times 18 = 3{,}960$ square yards.

In plan No. 3, the area occupied is the same as in No. 1, viz. 7,560 square yards.

In all the plans the areas given include the spaces between the tents, and they correspond to what are called the "built" and "unbuilt" areas in towns.

Plans Nos. 1 and 2 are so arranged that each double line of tents corresponds to the "built" area of a town, and the intervening spaces would represent the "unbuilt" area.

In plan No. 1 the area absolutely covered by two lines of tents, six in a line, and 2 yards between the lines is, yards $14 \times 36 = 504$ square yards.

In plan No. 2, six tents in two lines touching each other, cover a space $= 12 \times 18 = 216$ square yards.

The following on these data, would be about the population on the area of the camps reduced to a common unit:

Plan No. 1 = 348,000 per square mile.
" " 2 = 664,000 " "
" " 3 = 347,000 " "

The occupied areas alone, without the open spaces intervening between the rows of tents, are as follows:—

Plan No. 1 = 1,044,820 per square mile.
" " 2 = 1,290,000 " "

Sanitary principles of great importance are involved in the question of density of population upon a given area, and the whole subject has accordingly attracted considerable attention, more especially as it has been found that, other things being equal, the sickness and mortality among given populations bear a certain ratio to the density. The most densely peopled towns and districts are generally the most unhealthy. The prevailing diseases are fever, cholera, diarrhœa, consumption, and other diseases connected with atmospheric pollution. The air circulates less freely in densely populated districts, and the amount of organic refuse to be removed is, of course, much greater in proportion to the area where the population is more densely crowded than where such is not the case.

Inquiries into the density of town populations have shown that the densities vary from 10,000 or 12,000 inhabitants per square mile on the "built" and "unbuilt" area to 175,000 per square mile. In certain districts the population on the "built" area greatly exceeds these estimates.

Diagram Z. shows the comparison between the density of population on the built and unbuilt area of the whole of London and on the Quartermaster-General's plans. Each point represents a human being; the angular spaces the area allotted to each in the different densities, and the blue lines the distance from person to person.

It will be seen that the least crowded of the Quartermaster-General's plans affords about a twentieth part of the area per man allotted to each inhabitant of the metropolis; that it is about half the amount of that in the most densely peopled part of London; and that the population on the *occupied area* of the camp is above 50 times more crowded than the population of London.

If the metropolitan area were equally crowded as the camp No. 3 on the diagram, it would contain 42,000,000 of people.*

If crowded as No. 2, it would contain 81,000,000.

And if the metropolis were as crowded as the occupied area shown in the diagram, it would hold 127,000,000, or about four times the population of the three kingdoms!

These comparisons will be sufficient to show the great importance of this element of over-crowding to the health of camps. A great part of the disease and mortality in towns is due to its operation, and there can be no doubt that in camps formed of unventilated tents and huts, and overcrowded to such extreme degrees of density, it is one of the most powerful operative causes of camp diseases.

It may be sometimes necessary in war to overcrowd camps, but it is evidently a measure only to be resorted to under pressing necessity, for camps can only be crowded by a considerable sacrifice of the force from disease.

* The number of square miles within the area of the metropolis is 121·92

Square Mile.	Persons.	Square Miles.	Persons.
Then as 1	: 347,000 ::	121·92	: 42,000,000 nearly.

Tables A. and B.

Table showing what would be the Mortality of the British Army if the Rates were the same as those in (1) The Household Cavalry, (2) Dragoon Guards and Dragoons, (3) Infantry of the Line, (4) Foot Guards.

Ages.	Effectives of the British Army.	Deaths in the British Army at Home if the Mortality were the same as in					Ages.	Rate of Mortality per 1,000.				
	Numbers living in 1851.	Household Cavalry.	Dragoon Guards and Dragoons.	Infantry of the Line.	Foot Guards.	Total of the British Army at Home.		Household Cavalry.	Dragoon Guards and Dragoons.	Infantry of the Line.	Foot Guards.	Total of the British Army at Home.
Total -	136,277	1,498	1,818	2,545	2,776	2,381	Total - -	11·0	13·3	18·7	20·4	17·5
Under 20 -	11,911	90	99	157	133	146	Under 20 - -	7·5	8·3	13·1	11·2	12·2
20—25 -	50,387	588	626	896	1,087	858	20—25 - - -	11·7	12·4	17·8	21·6	17·0
25—30 -	38,242	394	547	758	806	702	25—30 - - -	10·3	14·3	19·8	21·1	18·3
30—35 -	22,099	293	326	438	431	406	30—35 - - -	13·3	14·8	19·8	19·5	18·4
35—40 -	10,005	84	153	211	224	193	35—40 - - -	8·4	15·3	21·0	22·4	19·3
40 & upwards	3,633	49	67	85	95	76	40 and upwards - -	13·4	18·3	23·4	26·2	21·0

The annual deaths among the 136,277 effectives of the British Army at home and abroad, if the mortality were the same as in the *Household Cavalry*, would be 1,493; in the *Dragoon Guards*, 1,818; in the *Infantry of the Line*, 2,545; in the *Foot Guards*, 2,776; and in the *Men of All Arms* in the British Service, 2,381.

The annual rate of mortality to 1,000 of the Household Cavalry is 11·0; of the Dragoon Guards 13·3; of the Infantry of the Line 18·7; of the Foot Guards 20·4; and of the Men of all Arms in the British Service at Home 17·5.

If the 136,277 soldiers had been subject to the rate of mortality which prevails in the healthiest districts of England, the annual deaths would have been 1,051; in one of the unhealthiest cities (Manchester) 1,688; and in all England 1,248.

Note—The numbers of men living in the British Army in 1851 were obtained from the Census Report of 1851. Vol. I. (Occupations) p. ccexlvi.

Table C.—*a*.

Table showing the Average Strength, Deaths, and Rate of Mortality in each Year, from 1839 to 1853, of the Officers, Non-commissioned Officers and Men, serving in the Army at Home and Abroad, exclusive of Artillery, Royal Engineers, West India and Colonial Corps.

Years.	Average Effective Strength.			Deaths.			Annual Mortality to 1,000 living.			Annual Mortality to 1,000 living of Men of the Soldiers' Ages, taken on Average of Five Years, 1849–53.	
	Officers, Non-Commissioned Officers and Men.	Officers.	Non-Commissioned Officers and Men.	Officers, Non-Commissioned Officers and Men.	Officers.	Non-Commissioned Officers and Men.	Officers, Non-Commissioned Officers and Men.	Officers.	Non-Commissioned Officers and Men.	In England and Wales.	In Healthy Districts.
1839	104,275	5,363	98,912	3,017	103	2,914	28·9	19·2	29·5	9·2	7·7
1840	112,922	5,383	107,539	3,385	85	3,300	30·0	15·8	30·7	9·2	7·7
1841	116,523	5,389	111,134	4,278	111	4,167	36·7	20·6	37·5	9·2	7·7
1842	120,576	5,390	115,186	5,190	138	5,052	43·0	25·6	43·9	9·2	7·7
1843	124,023	5,480	118,543	5,371	101	5,270	43·3	18·4	44·5	9·2	7·7
1844	124,826	5,492	119,334	3,944	77	3,867	31·6	14·0	32·4	9·2	7·7
1845	123,550	5,479	118,071	4,691	104	4,587	38·0	19·0	38·8	9·2	7·7
1846	126,232	5,588	120,644	5,243	118	5,125	41·5	21·1	42·5	9·2	7·7
1847	132,811	5,566	127,245	4,317	85	4,232	32·5	15·3	33·3	9·2	7·7
1848	133,433	5,512	127,921	3,308	95	3,213	24·8	17·2	25·1	9·2	7·7
1849	129,226	5,553	123,673	4,146	94	4,052	32·1	16·9	32·8	9·2	7·7
1850	124,657	5,546	119,111	3,189	70	3,119	25·6	12·6	26·2	9·2	7·7
1851	122,282	5,452	116,830	2,785	56	2,729	22·8	10·3	23·4	9·2	7·7
1852	124,083	5,460	118,623	3,194	74	3,120	25·7	13·6	26·3	9·2	7·7
1853	124,711	5,440	119,271	3,454	62	3,392	27·7	11·4	28·4	9·2	7·7
Total and Average 1839–53	1,844,130	82,093	1,762,037	59,512	1,373	58,139	32·3	16·7	33·0	9·2	7·7

The facts relative to the Army for this Table have been taken from a Return furnished by the Adjutant-General, No. LI. of Appendix.

Table C.—*b.*

Number of Deaths of Non-Commissioned Officers and Men, showing also the Number of Deaths that would have occurred if the Mortality were 7·7 *per* 1,000, such as it was among Englishmen of the Soldier's Age in healthy Districts, in the Years 1849–53, which fairly represented the Average Mortality.

Years.	*Deaths* that *would have occurred* in Healthy Districts among Males of the Soldier's Ages.*	Actual Deaths of Non-commissioned Officers and Men.	Excess of Deaths among Non-commissioned Officers and Men.
1839	763	2,914	2,151
1840	829	3,300	2,471
1841	857	4,167	3,310
1842	888	5,052	4,164
1843	914	5,270	4,356
1844	920	3,867	2,947
1845	911	4,587	3,676
1846	930	5,125	4,195
1847	981	4,232	3,251
1848	987	3,213	2,226
1849	954	4,052	3,098
1850	919	3,119	2,200
1851	901	2,729	1,828
1852	915	3,120	2,205
1853	920	3,392	2,472
Total - -	13,589	58,139	44,550

The Table may be read thus:—In the year 1839 the number of deaths among non-commissioned officers and men was 2,914 out of the strength (98,912—see preceding table); whereas the deaths among the *same number of men*, of the *same ages*, in the healthy districts of England, would have been only 763; consequently the excess of deaths in the army amounted to 2,151.

* The exact Mortality among Englishmen of the Soldier's ages, in the healthy districts, is ·0077122, the logarithm of which ($\bar{3}$·8871801) has been used in making this calculation.

Table D.

Number of Deaths of Non-Commissioned Officers and Men, showing also the Number of Deaths that would have occurred if the Mortality were 9·2 per 1,000, such as it was among Men of the Soldier's Ages in England and Wales, in the Years 1849–53.

Years.	Deaths that would have occurred in England and Wales among Males of the Soldier's Ages.	Deaths of Non-commissioned Officers and Men.	Excess of Deaths among Non-commissioned Officers and Men.
1839	910	2,914	2,004
1840	989	3,300	2,311
1841	1,022	4,167	3,145
1842	1,060	5,052	3,992
1843	1,091	5,270	4,179
1844	1,098	3,867	2,769
1845	1,086	4,587	3,501
1846	1,110	5,125	4,015
1847	1,171	4,232	3,061
1848	1,177	3,213	2,036
1849	1,138	4,052	2,914
1850	1,096	3,119	2,023
1851	1,075	2,729	1,654
1852	1,091	3,120	2,029
1853	1,097	3,392	2,295
Total - -	16,211	58,139	41,928

This Table may read thus:—In the year 1839 the number of deaths among non-commissioned officers and men was 2,914 out of the strength (98,912—see preceding table); whereas the deaths among the *same number of men*, of the *same ages*, living in England and Wales, would have been only 910! Consequently the excess of deaths in the army amounted to 2,004.

Table E.—*a.*

(1) Two Life Tables deduced from the Mortality of Soldiers in the English Army at Home (2) and from the Mortality of the Males of England at the same Age, 1849–53.

(*Facts relative to Soldiers, supplied by Sir A. Tulloch and Dr. Balfour's Report*, 1853, *p.* 31.)

Facts relative to Englishmen, supplied by the Registrar General.

Age.	English Soldiers living.	Englishmen living.	English Soldiers dying yearly.	Englishmen dying yearly.	Excess of Deaths among English Soldiers at Home.
20	10,000	10,000	169	82	87
21	9,831	9,918	168	83	85
22	9,663	9,835	166	84	82
23	9,497	9,751	164	85	79
24	9,333	9,666	162	86	76
25	9,171	9,580	160	87	73
26	9,011	9,493	159	88	71
27	8,852	9,405	158	89	69
28	8,694	9,316	157	91	66
29	8,537	9,225	155	91	64
30	8,382	9,134	153	93	60
31	8,229	9,041	150	94	56
32	8,079	8,947	147	95	52
33	7,932	8,852	145	97	48
34	7,787	8,755	144	97	47
35	7,643	8,658	144	99	45
36	7,499	8,559	143	101	42
37	7,356	8,458	141	102	39
38	7,215	8,356	138	103	35
39	7,077	8,253	135	106	29
40	6,942	8,147			

The Table enables you to follow 10,000 soldiers, from the age of 20 to the age of 40; showing how many die in each year of age, and how many remain alive at the end of each year of age. Thus of 10,000 soldiers alive at the exact age 20, 169 die in the next year of age, leaving alive 9,831 at the age 21.

For the sake of comparison, 10,000 of the male population of England are followed through the same ages. It will be noticed that of 10,000 soldiers, 7,077 live to the age 39, out of whom 135 die in the next year of age; whereas out of 10,000 men of all trades and occupations at the age 20, 8,253 attain the age of 39, and of these 106 die in the year of age following.

Table E.—*b.*

Table showing the Strength, Deaths, and Annual Rate of Mortality in the Household Brigade, and the Cavalry and Infantry of the Line, serving in the United Kingdom 1839–53; also showing what the Deaths would have been under more favourable Circumstances.

Years.	Strength.	Deaths.	Annual Rate of Mortality per 1,000.	Number of Deaths that would have occurred if the Mortality had been the same as it was among the Males at corresponding ages.		Excess of Deaths in Army at Home over the Deaths that would have occurred had the rate been annually.	
				In Healthy Districts	In England and Wales	7·7 per 1,000.	9·2 per 1,000.
1839	24,132	417	17·28	186	222	231	195
1840	19,159	321	16·75	148	176	173	145
1841	21,986	346	15·74	169	202	177	144
1842	23,019	360	15·64	177	212	183	148
1843	31,164	502	16·11	240	287	262	215
1844	37,265	635	17·04	287	343	348	292
1845	33,948	562	16·55	261	312	301	250
1846	30,280	577	19·06	233	279	344	298
1847	33,353	663	19·88	257	307	406	356
1848	37,766	629	16·66	291	347	338	282
1849	44,842	851	18·98	345	413	506	438
1850	36,794	479	13·02	283	339	196	140
1851	34,095	522	15·31	263	314	259	208
1852	35,067	469	13·37	270	323	199	146
1853	28,671	362	12·63	221	264	141	98
Total & Mean	471,541	7,695	16·32	3,631	4,340	4,064	3,355

The facts for this Table have been taken from the Tables No. LV. of Appendix. The Deaths from accident are included with the Deaths from disease.

F.—*a.*

Table showing, of 10,000 Recruits at the Age 20, the Numbers remaining at each successive Year of Age up to 40, and also the Numbers annually eliminated by Invaliding or by Death.—It has been constructed from the facts supplied by the Army Reports and by the Paper of Dr. Balfour, on Invaliding. The principle of construction is the same as that employed at the General Register Office, in constructing Life Tables. It is assumed that the Soldiers enter the Service at the age of 20 years.

Age.	British Soldiers.				Completed Years of Service.
	Living.	Dying and Invalided.	Dying.	Invalided.	
20	10,000	350	169	181	0
21	9,650	325	168	157	1
22	9,325	305	166	139	2
23	9,020	289	164	125	3
24	8,731	278	162	116	4
25	8,453	270	160	110	5
26	8,183	265	159	106	6
27	7,918	264	158	106	7
28	7,654	263	157	106	8
29	7,391	266	155	111	9
30	7,125	271	153	118	10
31	6,854	275	150	125	11
32	6,579	282	147	135	12
33	6,297	288	145	143	13
34	6,009	296	144	152	14
35	5,713	302	144	158	15
36	5,411	307	143	164	16
37	5,104	313	141	172	17
38	4,791	315	138	177	18
39	4,476	318	135	183	19
40	4,158				

Table F.—*b.*

Strength and Invaliding in the Army serving at Home, during the Years 1839—1853. (See No. LVIII. of Appendix).

Years Service.	Strength.				
	Household Cavalry.	Cavalry Line.	Foot Guards.	Infantry Line.	All Arms.
All periods of Service -	18,114	87,129	73,720	308,409	487,372
Years.					
0— 7 - -	8,332	48,541	36,761	195,628	289,262
7—14 - -	4,988	21,721	20,731	70,549	117,989
14—21 Infantry	—	—	12,707	39,097	51,804
14—24 Cavalry	4,188	15,453	—	—	19,641
21 and upwards Infantry -	—	—	3,521	3,135	6,656
24 and upwards Cavalry -	606	1,414	—	—	2,020
Invalided.					
All periods of Service -	589	2,836	2,282	9,859	15,566
Years.					
0— 7 - -	52	713	526	3,105	4,396
7—14 - -	68	510	335	1,486	2,399
14—21 Infantry	—	—	254	2,174	2,428
14—24 Cavalry	147	568	—	—	715
21 and upwards Infantry -	—	—	1,167	3,094	4,261
24 and upwards Cavalry -	322	1,045	—	—	1,367

Proportion of Troops invalided to 1,000 serving at each period of Service, at Home.

All periods of Service - - -	31·93
0— 7 - - - - -	15·19
7—14 - - - -	20·34
14—21 24 - - - -	43·98
21 and upwards 24 „ - -	648·46

Table F.—*c.*

Proportion of Troops, serving at Home, who died or were invalided out of 1,000 serving in the Household Cavalry, Cavalry, and Infantry in three septennial Periods of Service.

Ages.	Years of Service.	Deaths at Home.	Invalided at Home.	Invalided and Deaths.
		to 1,000 serving.		
20—27	0— 7	17·41	15·19	32·60
27—34	7—14	18·31	20·34	38·65
34—41	14—21 or 24	19·15	43·98	63·13

The Table may be read thus:—To 1,000 Troops who have served under 7 Years, of the Ages 20 and under 27, 17·41 die, 15·19 are Invalided, and 32·60 Die or are Invalided annually.

Note.—Table F.—*a.* was constructed from the facts in Tables F.—*b.* and F.—*c.*

F.—*d.*

Table showing the Number of Effectives (distinguishing Young Soldiers from Veterans) remaining (1) in the Army as it is; (2) in the Army in an Improved State—if the Number of Annual Recruits were 10,000, and the Army served only at Home in a time of Peace.

—	Years of Service.	Ages.	To 10,000 Annual Recruits. Upon the above hypothesis.		Excess of Strength in the Army in an Improved State.
			Army in its present Sanitary State.	Army in an Improved State.	
Effectives - -	0—20	20—40	141,764	166,910	25,146
Young Soldiers -	0—10	20—30	84,888	92,305	7,417
Veterans - -	10—20	30—40	56,876	74,605	17,729

The Table is intended to show more particularly the large number of Veterans lost to the Army as it is at present constituted:—Thus in the Army as it is, the number of Young Soldiers at the Ages 20—30 is 84,888, and of Veterans of the Ages 30—40 56,876, while in an improved state the numbers would be respectively 92,305 and 74,605, showing an addition to the strength of the Army of 7,417 Young Soldiers and 17,729 Veterans.

The number of Veterans actually in the Army, owing to Service in unhealthy stations abroad, is much less than in either of the above estimates; in 1851, of 120,733 men, 88,629 were of the Age 20—30, and only 32,104 were 30—40.

Table G.

Deaths and Annual Rate of Mortality per 1000 Living, from all Causes, Zymotic Diseases, Chest and Tubercular Diseases, and all other Diseases, amongst the English Male Population Aged 15–45 (1848–54), and amongst the Infantry of the Line serving at Home (1837–46.)

Causes of Death.	Deaths.		Annual Rate of Mortality per 1,000 living.	
	Of Males aged 15 to 45, in England and Wales, during the 7 Years 1848–54.	Infantry of the Line serving at Home during the 10 Years 1837–46.	Of Males aged 15 to 45, in England and Wales, during the 7 Years 1848–54.	Of Infantry of the Line serving at Home during the 10 Years 1837–46.
All Causes -	283,167	2,865	9·8	17·9
Zymotic Diseases - -	56,347	659	2·0	4·1
Chest and Tubercular Diseases - - -	130,753	1,612	4·5	10·1
All other Diseases (including Violent Deaths) - - -	96,067	594	3·3	3·7

Males aged 15–45 living in England and Wales in the middle of 1851	4,180,331
Aggregate Strength of Infantry of the Line (serving at Home) in 10 Years, 1837–46 - - - -	160,103

Note.—The deaths in England and Wales (1848–54) are taken from the 18th Annual Report of the Registrar-General, p. 150,

and the population (1851) from the Census Report, "Occupations," vol. I., p. clix. The deaths and aggregate strength of the infantry of the line (1837–46) are taken from Sir A. Tulloch's report on the health of the army for 1853, pp. 9, 62. At p. 9, in addition to the 2,683 deaths from disease (p. 62), are returned the particulars of 127 deaths by violence: leaving, however, 55 deaths unaccounted for. 2,683 + 127 + 55, make the above 2,865 deaths.

Bronchitis and influenza have no place in the army nomenclature. The chronic catarrh of the army returns is believed to be really phthisis, in the great majority of cases; acute catarrh comprehends probably both epidemic catarrh, or influenza and bronchitis. The 55 deaths from acute catarrh have been treated as influenza and referred to zymotic diseases. The deaths from tubercular and chest diseases comprise scrofula, 24 (including apostema lumbare, 10; hydrarthrus, 1); phthisis, 1,241; hæmoptysis, 36; chronic catarrh, 135; hydrocephalus, 2; asthma, 2; dyspnea, 7; pleurisy, 10; pneumonia, 155. The zymotic diseases are, as far as the nomenclature allows, the same as those enumerated in the Registrar-General's 16th Annual Report, pp. 83–5 of the Appendix.

Table II.—*a*.

Mortality in the Army of the East in Hospital during 2¼ Years, from April 1st, 1854, to June 30th, 1856.

Period.	Years of Life or aggregate Strength.	Average Strength of the Army.	Deaths.	Annual Mortality per Cent.
April 1st, 1854, to June 30th, 1856, (2¼ years) -	79,273	34,526	18,057	22·78

Note.—The years of life and the average strength of the Army have been derived from the Weekly Return of the strength from April 1855 to May 1856 (inclusive), and for the previous period, April 1854, to March 1855 (inclusive), from the Return (A.) of the deaths during each month, and from a Return of the Rate of Mortality during the same periods.

Class of Diseases.	Number of Deaths from specified Causes.	Of the Total Deaths, the proportion per cent. from each Class.	Of the Total Deaths, (exclusive of violent Deaths), the proportion per cent. from each Class.	Deaths Annually, to 100 Living.
1 Zymotic -	14,507	81·9	94·3	18·7
2 Constitutional -	204	1·1	1·3	·3
3 Local - -	668	3·8	4·3	·9
4 Developmental	19	·1	·1	—
5 Violent - -	2,314	13·1	—	3·0

Table H.—*b*.

Annual Rate of Mortality per Cent., from different Classes of Disease, in Hospital in the Army of the East, and in the English Male Population of the Ages 15—45.

Class of Diseases.	Deaths annually, to 100 living.	
	In the Army of the East.	English Male Population, 15–45 (1848–54).
1 Zymotic Diseases - -	18·7	·20
2 Constitutional Diseases -	·3	·42
3 Local Diseases - -	·9	·26
4 Developmental Diseases	—	—
5 Violent Deaths - -	3·0	·10
All Causes -	22·9	·98

Table K.—Figure 1.

Table showing the Estimated Average Monthly Strength of the Army; and the Deaths and Annual Rate of Mortality per 1,000, in each Month, from April 1854 to March 1856, (inclusive), in the Hospitals of the Army in the East.

Months.	Estimated Average Monthly Strength of the Army.	Deaths.			Annual Rate of Mortality per 1,000.		
		Zymotic Diseases.	Wounds and Injuries.	All other Causes.	Zymotic Diseases.	Wounds and Injuries.	All other Causes.
1854							
April -	8,571	1	—	5	1·4	—	7·0
May -	23,333	12	—	9	6·2	—	4·6
June -	28,333	11	—	6	4·7	—	2·5
July -	28,722	359	—	23	150·0	—	9·6
August -	30,246	828	1	30	328·5	·4	11·9
September	30,290	788	81	70	312·2	32·1	27·7
October -	30,643	503	132	128	197·0	51·7	50·1
November	29,736	844	287	106	340·6	115·8	42·8
December	32,779	1,725	114	131	631·5	41·7	48·0
1855							
January -	32,393	2,761	83	324	1022·8	30·7	120·0
February	30,919	2,120	42	361	822·8	16·3	140·1
March -	30,107	1,205	32	172	480·3	12·8	68·6
April -	32,252	477	48	57	177·5	17·9	21·2
May -	35,473	508	49	37	171·8	16·6	12·5
June -	38,863	802	209	31	247·6	64·5	9·6
July -	42,647	382	134	33	107·5	37·7	9·3
August -	44,614	483	164	25	129·9	44·1	6·7
September	47,751	189	276	20	47·5	69·4	5·0
October -	46,852	128	53	18	32·8	13·6	4·6
November	37,853	178	33	32	56·4	10·5	10·1
December	43,217	91	18	28	25·3	5·0	7·8
1856							
January -	44,212	42	2	48	11·4	·5	13·0
February	43,485	24	—	19	6·6	—	5·2
March -	46,140	15	—	35	3·9	—	9·1

The Deaths under the head of "Wounds and Injuries" comprise the following causes:—Luxatio, Sub-luxatio, Vulnus Sclopitorum, Vulnus Incisum, Contusio, Fractura, Ambustio, and Concussio Cerebri.

Table K.—Figure 2.

Annual Rate of Mortality per Cent. on Sick Population at Scutari, from October 1st, 1854, to June 30th, 1855.

	Annual Rate of Mortality per *Cent.*
1854 October 1st to October 14th -	148
October 15th „ November 11th -	101
November 12th „ December 9th -	121
December 10th „ January 6th -	202
1855 January 7th „ January 31st -	319
February 1st „ February 28th -	415
February 25th „ March 17th -	235
March 18th „ April 7th -	125
April 8th „ April 28th -	79
April 29th „ May 19th -	60
May 20th „ June 9th -	56
June 10th „ June 30th -	34

General Return showing the Primary Admissions into the Hospitals of the Army in the East, from the 10th April 1854, to the 30th June 1856; also the Deaths from Primary as well as Secondary Admissions, together with those occurring on board Transports, conveying Sick and Wounded, during the same period.—Arranged according to the Classification of Causes of Death proposed by Dr. Farr, in the 16th Annual Report of the Registrar-General, pp. 82—96., so far as this is practicable under the imperfect system of nomenclature in use.

Class.	Causes of Death.	Admissions.	Deaths.
	All Causes	162,123	18,057
	Specified Causes	161,297	17,712
	DISEASES :—		
I.	Zymotic	112,651	14,507
II.	Constitutional	828	204
III.	Local	25,043	668
IV.	Developmental	214	19
V.	Violent	22,561	2,314
	ORDERS.		
I.	1. Miasmatic	108,577	14,503
	2. Enthetic	3,748	4
	3. Dietic (included in Order I.)	—	—
	4. Parasitic	326	—
II.	1. Diathetic	458	84
	2. Tubercular	370	120
III.	Diseases of the :—		
	1. Nervous System	4,051	117
	2. Organs of Circulation	263	41
	3. Respiratory Organs	2,607	384
	4. Digestive Organs	4,592	84
	5. Urinary Organs	239	6
	6. Organs of Generation	—	—
	7. Organs of Locomotion	129	1
	8. Integumentary System	13,162	35
IV.	1—3. Not occurring in the Army.	—	—
	4. Diseases of Nutrition	214	19
V.	1. Accident	2,484	532
	2. Battle	18,283	1,761
	3. Suicide	20	20
	4. Homicide	—	—
	5. Punishment and Execution	1,774	1
	Causes not specified	826	345
	Order 1.		
I.	Smallpox	21	4
	Measles	5	2
	Scarlatina	3	—
	Quinsey	924	9
	Erysipelas	78	21
	Phlebitis	3	—
	Typhus (and continued Fever)	25,841	3,075
	Carbuncle	—*	—*
	Influenza	9,506	144
	Dysentery	8,278	2,259
	Diarrhœa	44,164	3,651
	Cholera	6,970	4,512
	Ague	2,406	60
	Remittent Fever	2,957	311
	Rheumatism (Acute and Chronic)	5,044	233
	Order 2.		
I.	Syphilis	3,748	4
	Hydrophobia	—*	—*
	Order 3.		
I.	Privation	?*	?*
	Purpura and Scurvy (see above under Dysentery)	2,096	178
	Alcoholism (includes only Delirium Tremens, other cases not returned)	281	44
	Order 4.		
I.	Scabies	257	—
	Worms	68	—
	Dracunnculus	1	—
II.	Order 1.		
	Gout	—*	—*
	Dropsy	294	63
	Cancer et Tumores	62	1
	Mortification	79	20
	Cachexia	23	—
II.	Order 2.		
	Scrofula	90	3
	Phthisis	279	116
	Hydrocephalus	1	1
III.	Order 1.		
	Cephalitis	11	7
	Apoplexy	87	70
	Paralysis	42	10
	Insanity (Dementia)	44	4
	Epilepsy	261	17
	Tetanus	10	8
	Cephalalgia	128	—
	Neuralgia	28	—
	Ophthalmitis	3,307	—
	Otitis	133	1
III.	Order 2.		
	Pericarditis	24	4
	Aneurism	9	8
	Heart Disease	127	29
	Varix	58	—
	Palpitatio	45	—
III.	Order 3.		
	Epistaxis	10	—*
	Laryngitis	—*	—
	Bronchitis	1,688	199
	Pleurisy	264	23
	Pneumonia	590	161
	Asthma and Dyspnœa	55	1
	Other Lung Diseases	—	—
III.	Order 4.		
	Gastritis	29	8
	Enteritis	36	11
	Peritonitis	16	9
	Ascites	—*	—*
	Ulceration of Intestines	—*	—*
	Hernia	101	2
	Ileus et Constipatio	1,862	5
	Intussusception	1	1
	Stricture of Intestines	—*	—*
	Fistula	129	3
	Dyspepsia	906	3
	Hæmorrhois	358	—
	Hæmatemesis	15	2
	Singultus	1	—
	Pancreas	—*	—*
	Hepatitis	251	17
	Jaundice	878	22
	Other Liver Diseases	—*	—*
	Spleen Disease	9	1
III.	Order 5.		
	Nephritis (and Nephria)	26	2
	Ischuria	39	—
	Nephria (see above)	—	—
	Diabetes	8	1
	Stone	—*	—*
	Hæmaturia	1	—
	Cystitis	9	1
	Stricture of Urethra	139	2
	Hydrocele	15	—
	Varicocele	2	—

* No admissions or deaths were returned under any of these heads.

Class.	Causes of Death.	Admissions.	Deaths.
III.	Order 6.		
	(Not applicable to the Army.)	—	—
III.	Order 7.		
	Arthritis	87	—
	Ostitis and Periostitis	7	—
	Joint Disease	25	1
	Exostosis	2	—
	Necrosis, Caries, &c.	8	—
III.	Order 8.		
	Phlegmon	8,323	23
	Ulcer	4,090	11
	Skin Diseases	749	1
IV.	Orders 1—3.		
	(Not applicable to the Army.)	—	—
IV.	Order 4.		
	Atrophy and Debility	214	19
V.	Order 1.		
	Gelatio (Frostbite)	2,389	463
	Pernio (Chilblain)	9	—
	Sunstroke	13	2
	Asphyxia	2	2
	Poisoning	6	—
	Other violent Deaths*	65	65
V.	Order 2.		
	(It is not stated that all these wounds and injuries were incurred in fighting, but, there being no means of distinction, they have all been referred to this Order.)		
	Luxatio	80	1
	Subluxatio	1,453	1
	Vulnus Scelopitorum	10,691	1,706
	„ Incisum	1,270	18
	Contusio	4,006	21
	Fractura	380	14
	Ambustio	399	—
	Concussio Cerebri	4	—
V.	Order 3.		
	Suicide†	20	20
V.	Order 4.		
	Homicide	—‡	—‡
V.	Order 5.		
	Execution	1§	1§
	Punishment	1,773	—
	Causes not specified	826	345

* These are not properly returned, but appear under the collective head of "Accidental, Sudden, Ebrietas, and Cold, &c.

† Unsuccessful attempts at suicide were, apparently, not recorded.

‡ No admissions or deaths were returned under any of these heads.

§ This case was returned simply as hanging.

Note.—The names of certain Orders as well as those of certain specific Diseases are omitted, as not applicable to the Army.

Table Z.—Density of Population.

A few Districts of Great Density—consisting of Built Area and Streets.

Districts and Towns.	Persons to a Square Mile, 1841–50.*
East London	175,816
Strand	161,556
St. Luke	151,104
Holborn	148,705
St. James', Westminster	144,008
Liverpool	69,368
Birmingham	37,554
Leeds	28,965
Bristol	22,606
Nottingham	19,082
East Stonehouse	18,028
London	17,678
Plymouth	17,368
Hull	16,082
Manchester	10,664

Quarter-Master General's Plans for Encampments.		
No. 2	Occupied and Unoccupied Area.	664,000
No. 1		348,000
No. 3		347,000
Occupied Area		1,044,820

* The number of persons to a square mile in the districts and towns of England, calculated on the mean population of 1841 and 1851, has been taken from the Registrar-General's Sixteenth Annual Report, Supplemental Tables, pp. 150–153.

APPENDIX LXXIII.

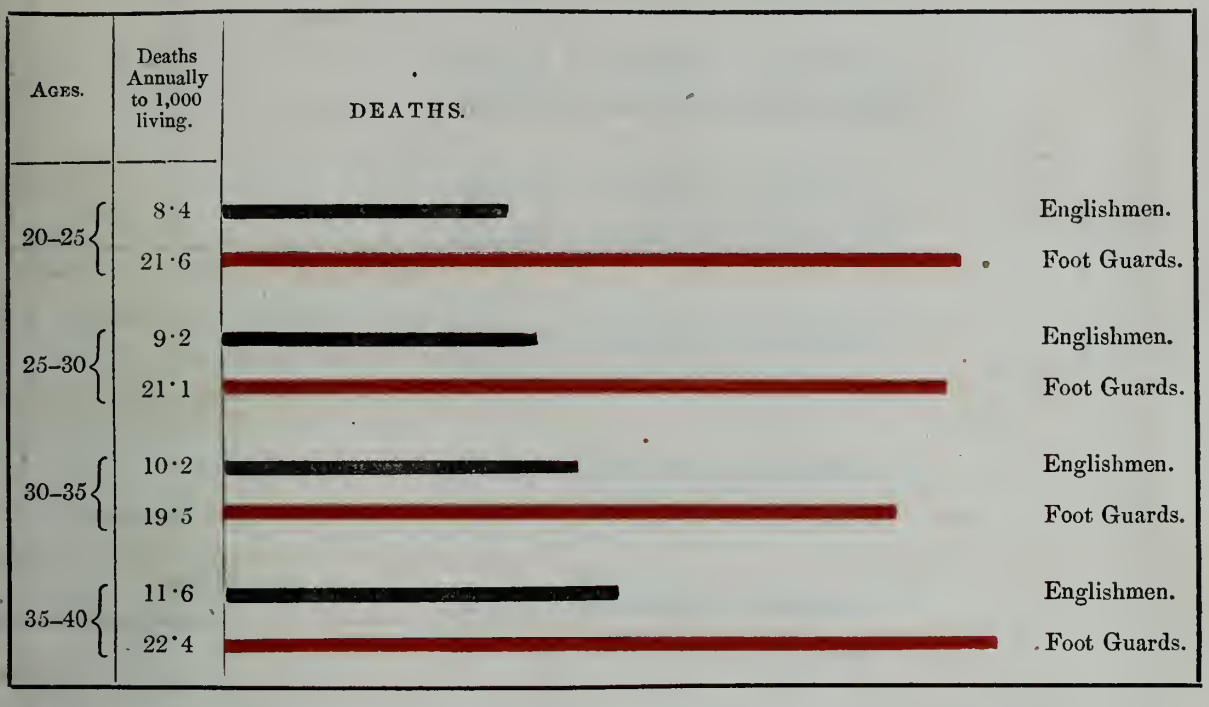
Plan of a Barrack by Colonel Jebb.

(*See end of Appendix.*)

(A.)

LINES

Representing the Relative Mortality of the **Foot Guards** and of the **English Male Population** at corresponding Ages.

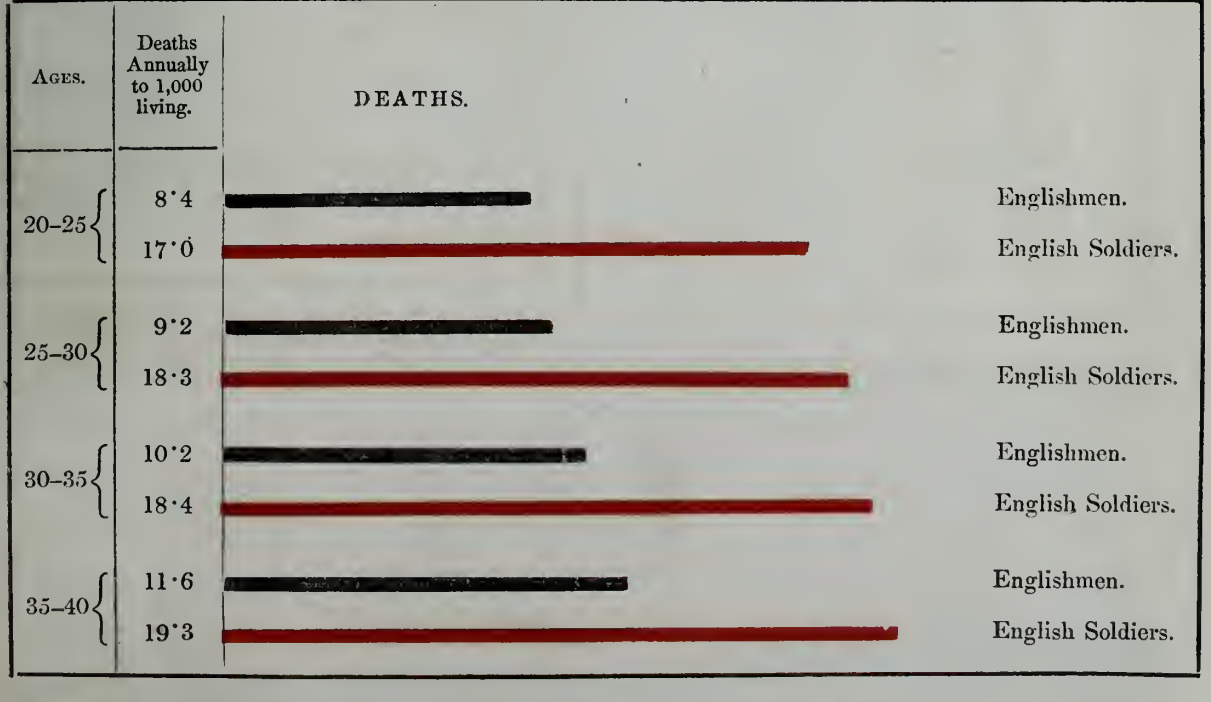


NOTE.—The Mortality of the English Male Population, at the above Ages, is taken from English Life Table (1849–53).

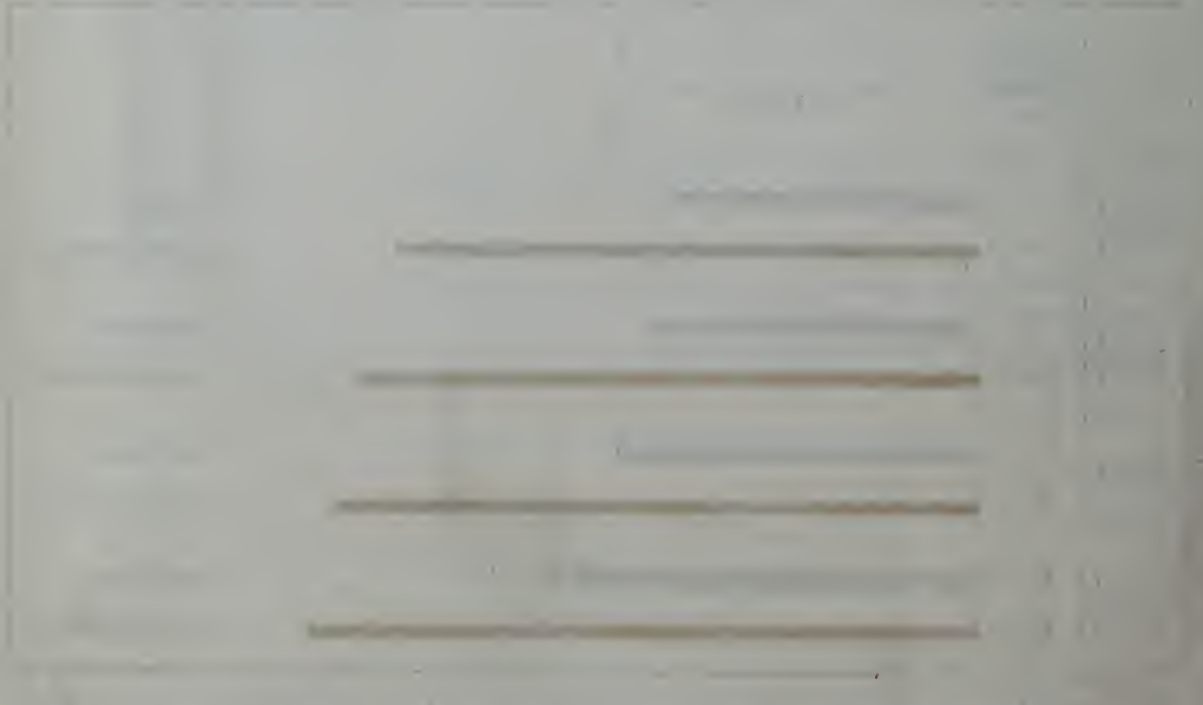
(B.)

LINES

Representing the Relative Mortality of the **Army at Home** and of the **English Male Population** at corresponding Ages.



NOTE.—The Mortality of the English Male Population, at the above Ages, is taken from English Life Table (1849–53).



(C.)

DIAGRAM representing the relative Mortality of Males of the Soldiers Ages living in Healthy Districts; and of the Non-Commissioned Officers and Men serving in the Army abroad and at home exclusive of Artillery Royal Engineers West India and Colonial Corps. 1839 – 1853

Years	Annual Rate of Mortality per 1000	DEATHS
1839	7·7	Males in Healthy Districts
	29·5	Soldiers at Home & Abroad
1840	7·7	Males in Healthy Districts
	30·7	Soldiers at Home & Abroad
1841	7·7	Males in Healthy Districts
	37·5	Soldiers at Home & Abroad
1842	7·7	Males in Healthy Districts
	43·9	Soldiers at Home & Abroad
1843	7·7	Males in Healthy Districts
	44·5	Soldiers at Home & Abroad
1844	7·7	Males in Healthy Districts
	32·4	Soldiers at Home & Abroad
1845	7·7	Males in Healthy Districts
	38·8	Soldiers at Home & Abroad
1846	7·7	Males in Healthy Districts
	42·5	Soldiers at Home & Abroad
1847	7·7	Males in Healthy Districts
	33·3	Soldiers at Home & Abroad
1848	7·7	Males in Healthy Districts
	25·1	Soldiers at Home & Abroad
1849	7·7	Males in Healthy Districts
	32·8	Soldiers at Home & Abroad
1850	7·7	Males in Healthy Districts
	26·2	Soldiers at Home & Abroad
1851	7·7	Males in Healthy Districts
	23·4	Soldiers at Home & Abroad
1852	7·7	Males in Healthy Districts
	26·3	Soldiers at Home & Abroad
1853	7·7	Males in Healthy Districts
	28·4	Soldiers at Home & Abroad
Average 1839–53	7·7	Males in Healthy Districts
	33·0	Soldiers at Home & Abroad

NOTE. The Mortality of Males in the Healthy Districts is based on an average of 5 Years and in this view is represented as uniform in each of the years given in the Diagram

DIAGRAM.—*representing the relative Mortality of Males of the Soldiers Ages living in England and Wales; and of the Non-Commissioned Officers and Men serving in the Army, exclusive of Artillery, Royal Engineers, West India, and Colonial Corps, 1839–1853.*

Years.	*Annual Rate of Mortality per 1000.*	DEATHS	
1839	9 · 2		*Males in England & Wales*
	29 · 5		*Soldiers at Home & Abroad*
1840	9 · 2		*Males in England & Wales*
	30 · 7		*Soldiers at Home & Abroad*
1841	9 · 2		*Males in England & Wales*
	37 · 5		*Soldiers at Home & Abroad*
1842	9 · 2		*Males in England & Wales*
	43 · 9		*Soldiers at Home & Abroad*
1843	9 · 2		*Males in England & Wales*
	44 · 5		*Soldiers at Home & Abroad*
1844	9 · 2		*Males in England & Wales*
	32 · 4		*Soldiers at Home & Abroad*
1845	9 · 2		*Males in England & Wales*
	38 · 8		*Soldiers at Home & Abroad*
1846	9 · 2		*Males in England & Wales*
	42 · 5		*Soldiers at Home & Abroad*
1847	9 · 2		*Males in England & Wales*
	33 · 3		*Soldiers at Home & Abroad*
1848	9 · 2		*Males in England & Wales*
	25 · 1		*Soldiers at Home & Abroad*
1849	9 · 2		*Males in England & Wales*
	32 · 8		*Soldiers at Home & Abroad*
1850	9 · 2		*Males in England & Wales*
	26 · 2		*Soldiers at Home & Abroad*
1851	9 · 2		*Males in England & Wales*
	23 · 4		*Soldiers at Home & Abroad*
1852	9 · 2		*Males in England & Wales*
	26 · 3		*Soldiers at Home & Abroad*
1853	9 · 2		*Males in England & Wales*
	28 · 4		*Soldiers at Home & Abroad*
Average	9 · 2		*Males in England & Wales*
1839–53	33 · 0		*Soldiers at Home & Abroad*

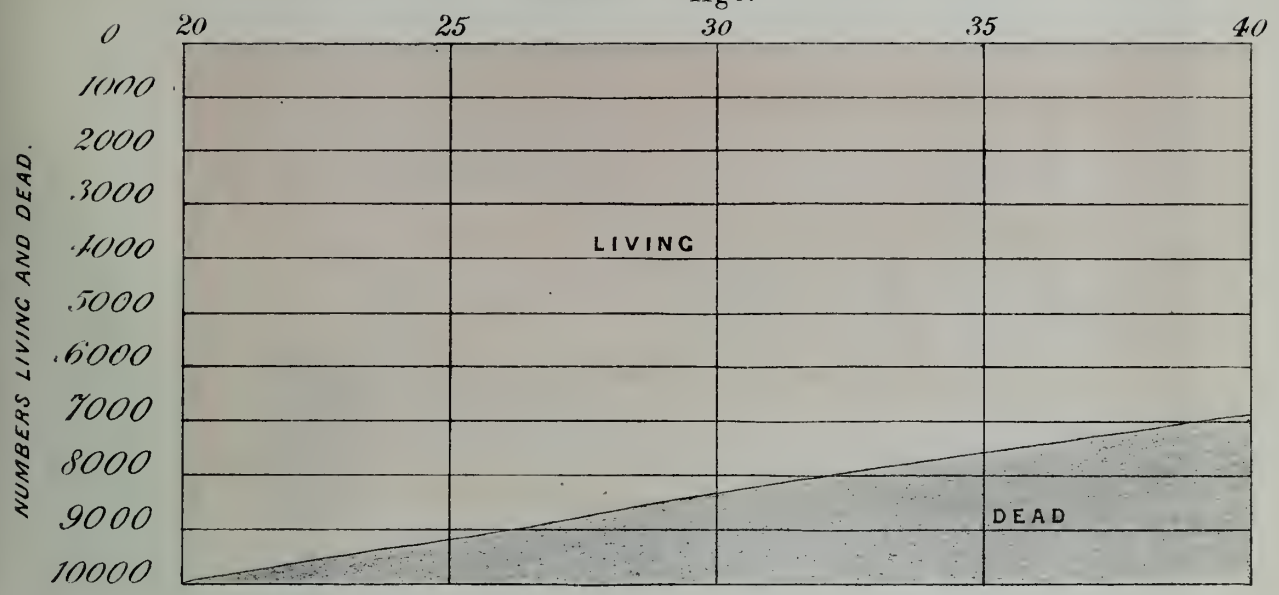
J. Williams del. Colonial Office

NOTE. The Mortality of Males is based on an Average of 5 Years and in this view is represented as uniform in each of the years given in the Diagram of the Soldiers Ages in England and Wales

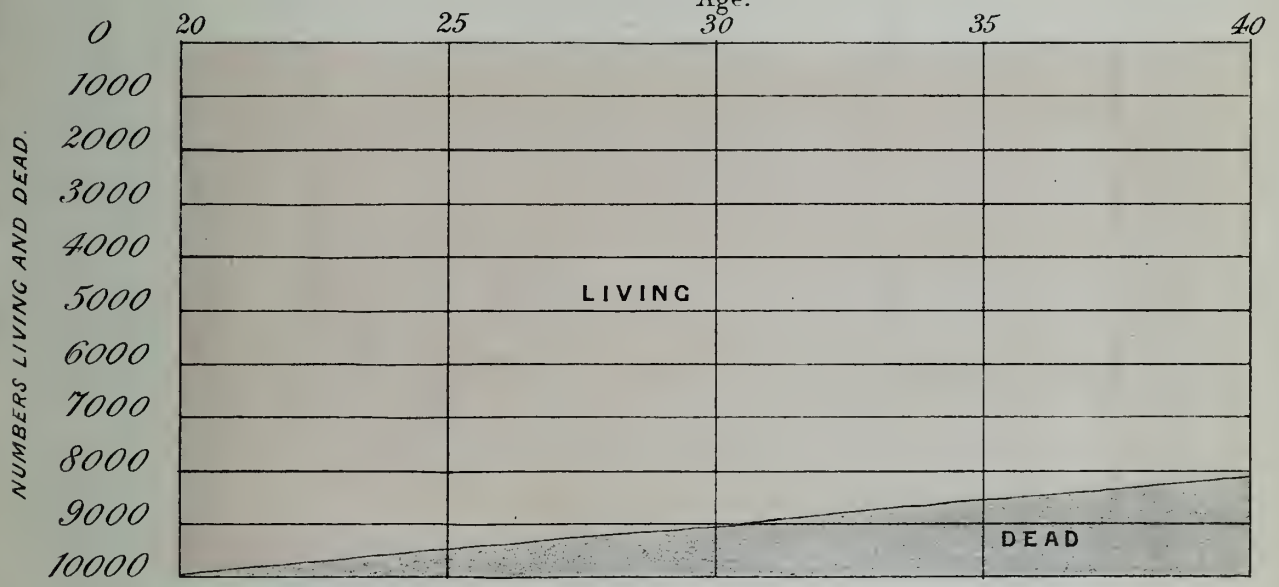
DIAGRAM

Showing the Numbers Living and Dead at the several Ages from 20 – 40.

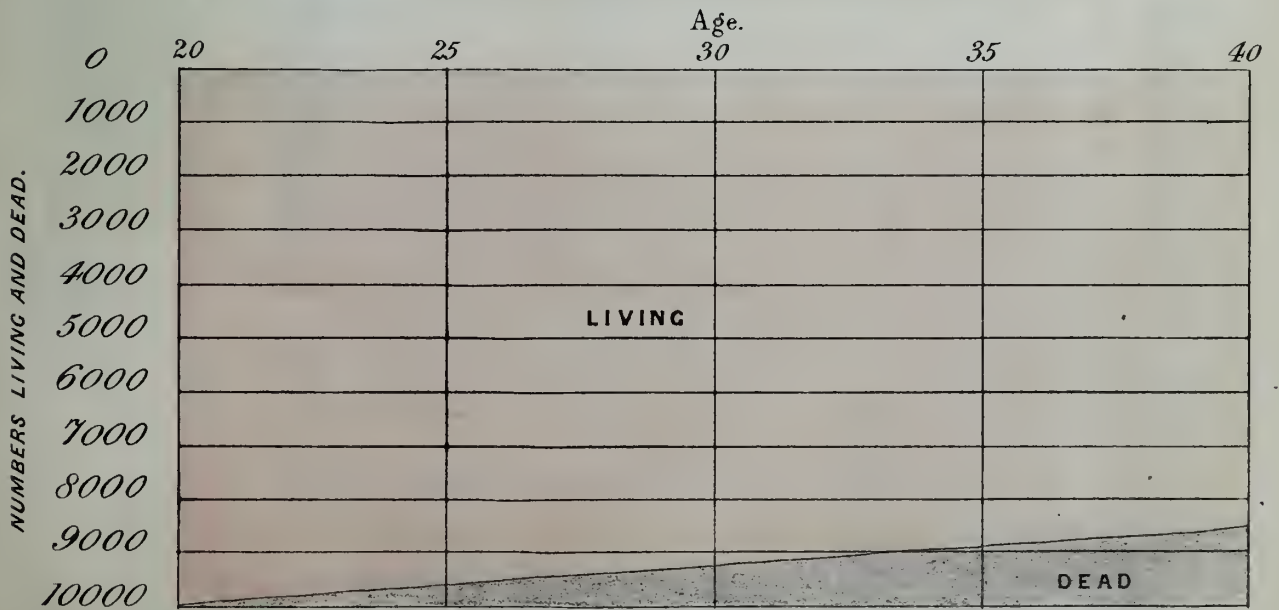
1. ENGLISH SOLDIERS.



2. ENGLISHMEN.



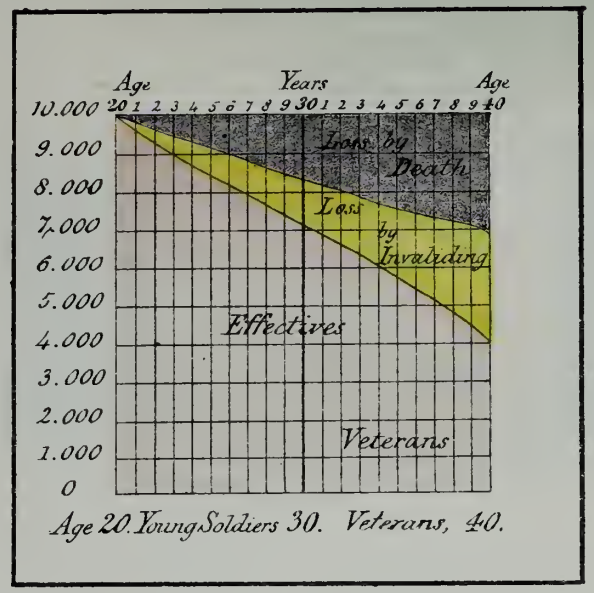
3. ENGLISHMEN IN HEALTHY DISTRICTS.



Thus:– the Diagram (1) shows that out of 10.000 Soldiers alive at the Age of 20, about 7000 are living and 3000 are dead at the Age 40.

F.

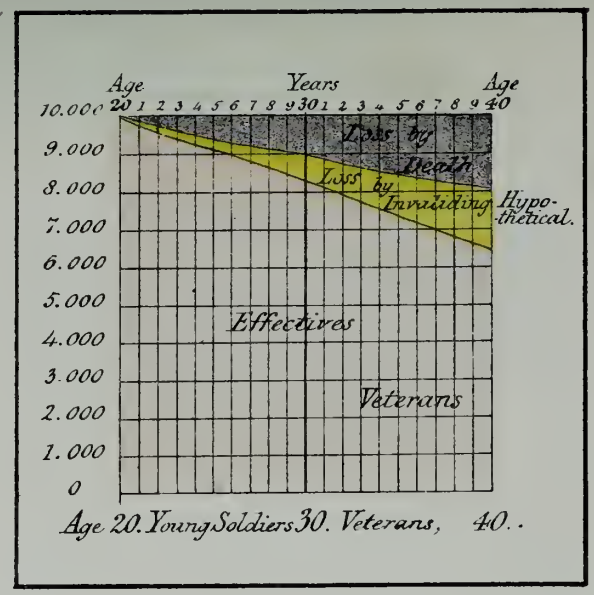
I. DIAGRAM – representing the ARMY at Home in its present State.



I. *This Diagram has been constructed to illustrate Table F. a.*

Each of the 200 small Parallelograms represents 1000 Men.

II. DIAGRAM – representing the ARMY at Home in an improved State.



II. *This Diagram is constructed so as to show what the State of the Army at Home would be if the Mortality were the same as it is in the Civil Population at corresponding Ages, and if the Invaliding bore the same proportion to the Deaths as it does in Diagram I. The Invaliding may be more, but it would probably be less than it is represented to be in Diagram II.*

TWO DIAGRAMS *showing the loss of strength in the* ARMY *by* INVALIDING *and by* DEATH.

The force 141, 764 (represented by the **RED** *Area,) is assumed to be maintained by 10, 000 Annual Recruits, which if there were no loss by Death, or by Invaliding would sustain a force of 200, 000 Men, represented by the Square figures. – The loss of strength shown in Diagram I is equal to 58, 237 = 29 per Cent.*

The **DARK** *Area represents the loss of strength by* DEATH.

The **YELLOW** *Area represents the loss of strength by* INVALIDING, *and it will be borne in mind that many of the Invalided die soon after leaving the Army.*

NOTE. 10, 000 Annual Recruits under System Nº I, would sustain a force of 141, 764; under System Nº 2, 10, 000 Annual Recruits would sustain a force of 166, 910. (See Table F. d.)

Owing to Service abroad in unhealthy Stations, the numbers are actually reduced much more rapidly than they are at home, as shown in Diagram I.

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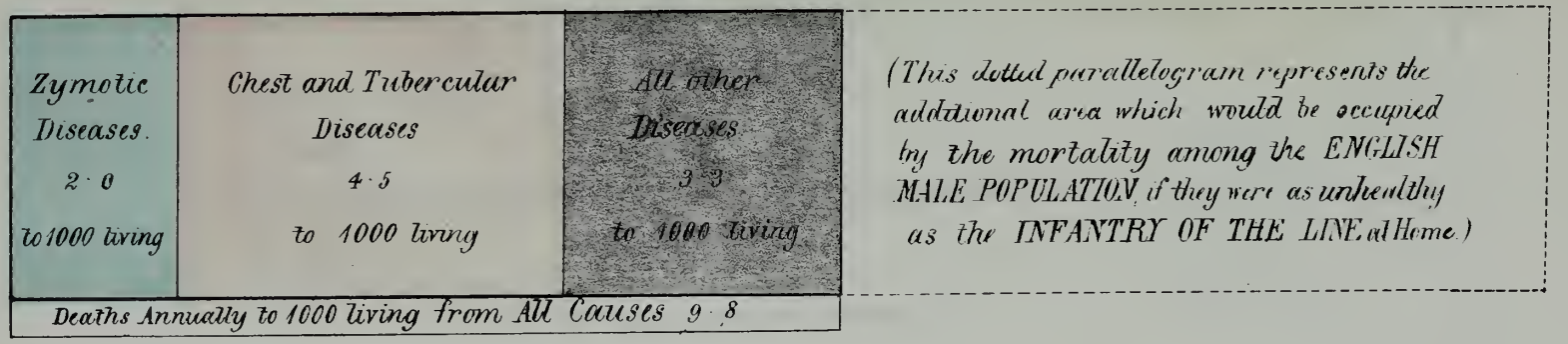
DIAGRAMS

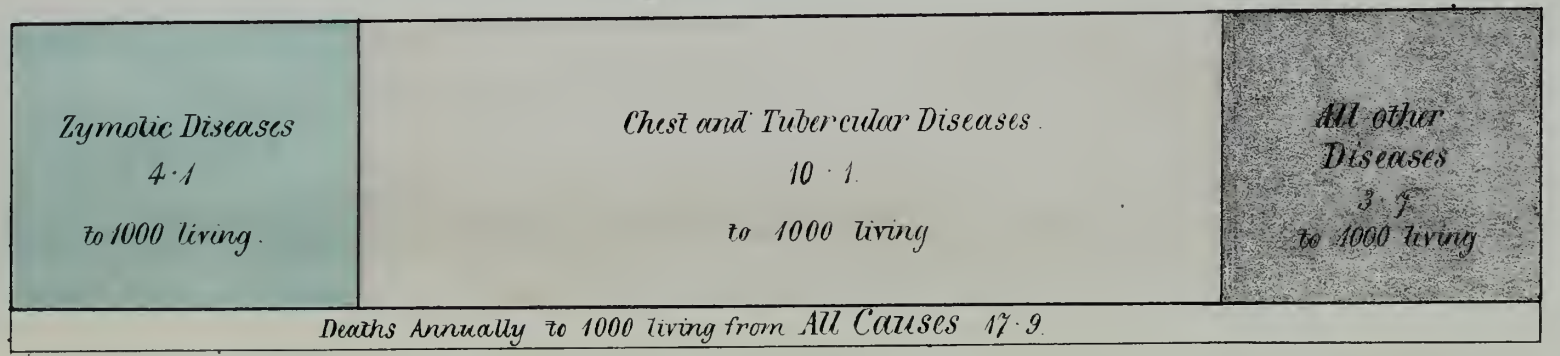
(to illustrate Table C.)

representing the relative Annual Mortality from ALL CAUSES, ZYMOTIC DISEASES, CHEST and TUBERCULAR DISEASES, and OTHER DISEASES in the ENGLISH MALE POPULATION aged 15–45. and in the INFANTRY OF THE LINE serving at Home.

ENGLISH MALE POPULATION AGED 15–45. (1848–54).



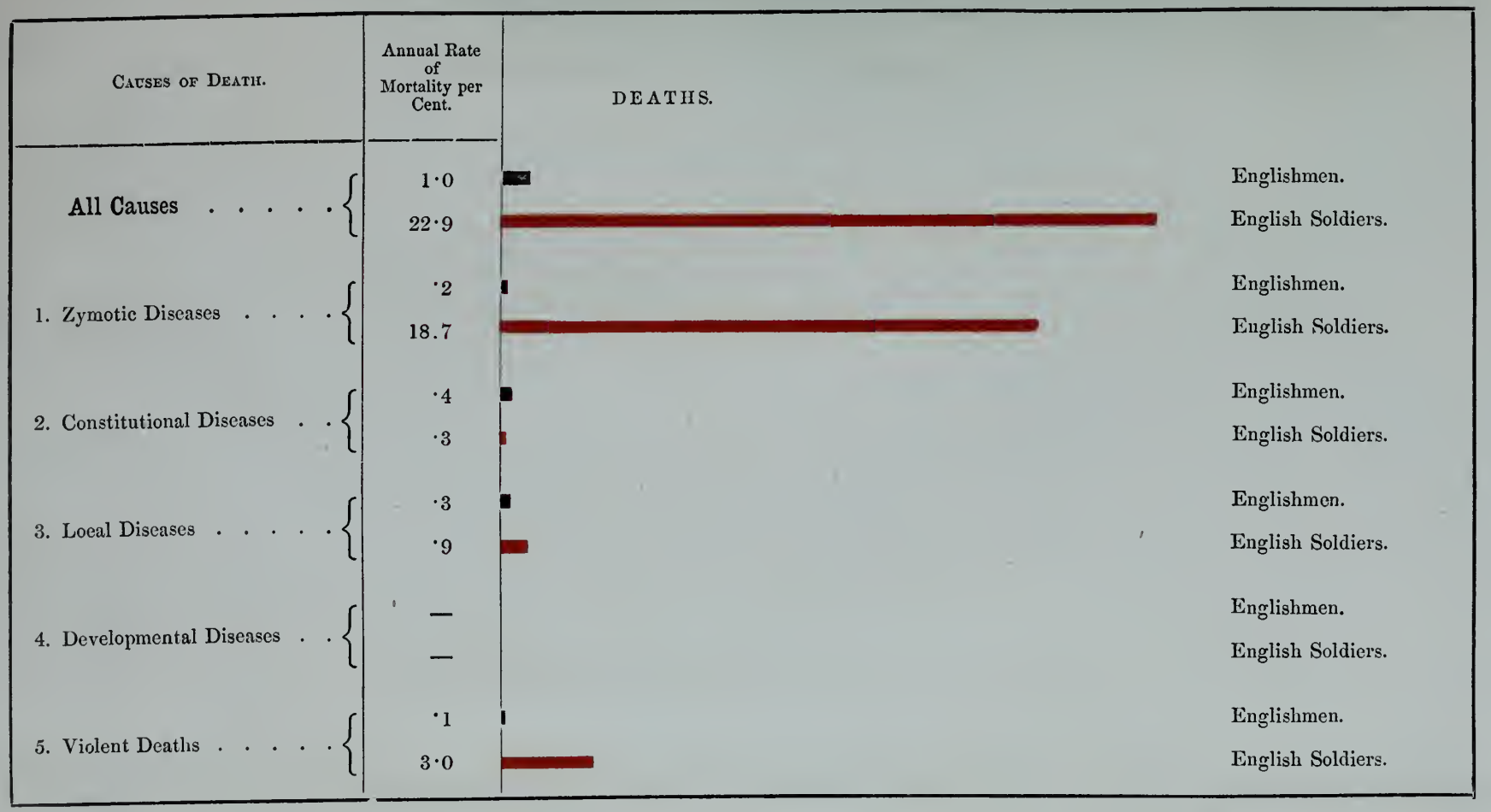
INFANTRY OF THE LINE (SERVING AT HOME) (1837–46).



(H.)

LINES

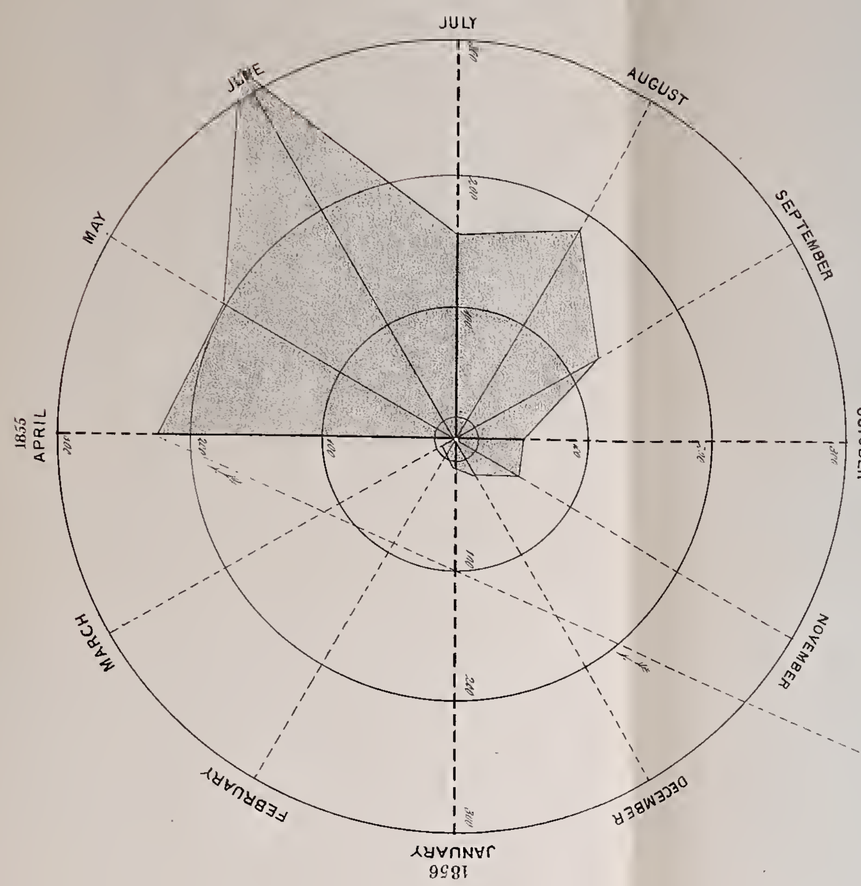
Representing the Relative Mortality, from different Causes, of the **Army in the East in Hospital** and of the **English Male Population** aged 15—45.



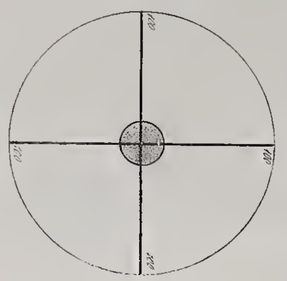
All the Lines on this Diagram would require to be lengthened Tenfold to be on the same Scale as the Lines on Diagrams **A** and B.

ARMY IN THE EAST.

APRIL 1855 TO MARCH 1856



MANCHESTER



APRIL 1854 TO MARCH 1855

EXPLANATION.

The Diagrams represent the ANNUAL RATE of Mortality per 1000 in the Hospitals of the Army in the East for each Month from April 1854 to March 1856

The inner circle shows the Mortality which the Army would have experienced if it had been subject to the same rate which prevailed in one of the unhealthiest Cities of England (Manchester).— The distances between the Centre and the second, the second and the third circles &c. each represent 100 deaths to 1000 living.— The Annual rate of Mortality in any particular Month is shown by the length of the radial line extending from the centre in the direction of the Month indicated on the outer circle.

Thus:— In January 1855 the Annual rate of Mortality per 1000 was 1174. a higher rate than that which prevailed during the Month (September) when the Mortality was highest in the year of the Great Plague, 1665.

James Lewis, del. General Register Office, Somerset House

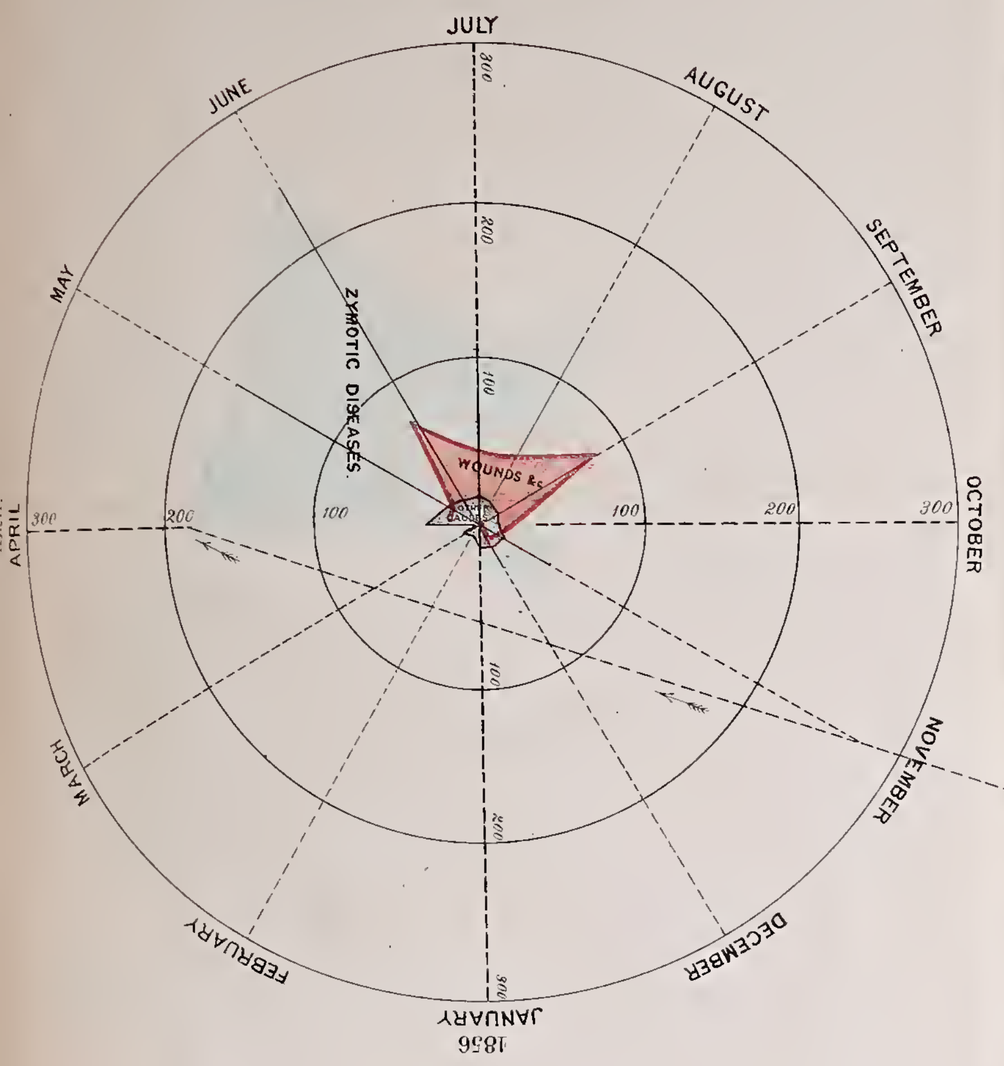
DIAGRAMS

representing the relative Mortality from ZYMOTIC DISEASES (blue); from WOUNDS &c. (red); and from ALL OTHER CAUSES (black);—

IN THE HOSPITALS OF THE ARMY IN THE EAST,

FOR EACH MONTH FROM APRIL 1854 TO MARCH 1856.

APRIL 1855 TO MARCH 1856.



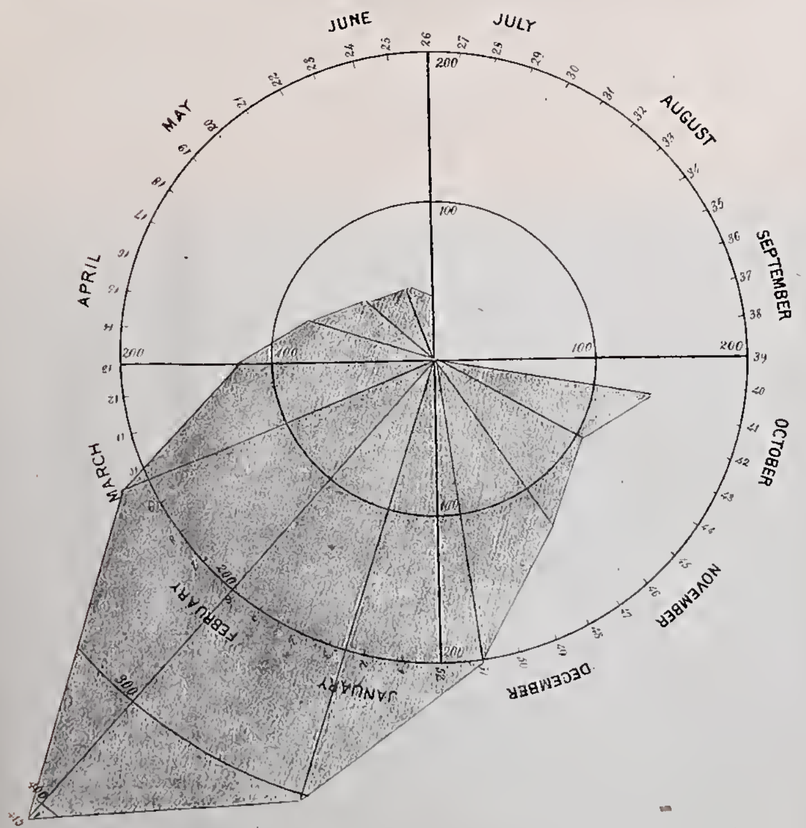
DIAGRAM

showing the Annual Rate of Mortality Per Cent, on the

SICK POPULATION AT SCUTARI,

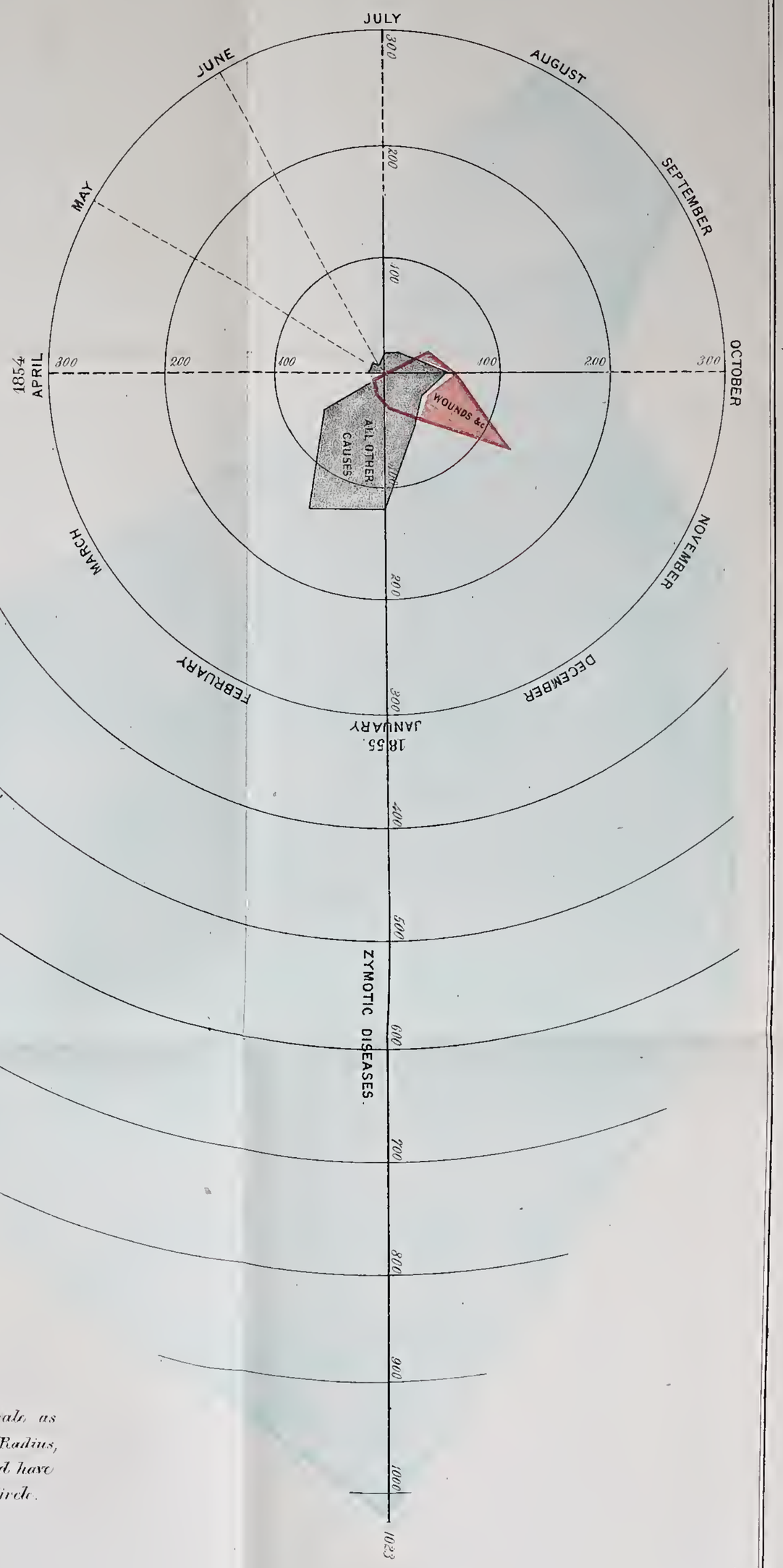
FROM OCTOBER 1st 1854 TO JUNE 30th 1855.

Fig. 2.



Had Fig. 2 been projected on the same Scale as the other Figures on this Sheet, the longest Radius, showing the Mortality in February, would have projected 40 inches from the Centre of the Circle.

APRIL 1854 TO MARCH 1855.



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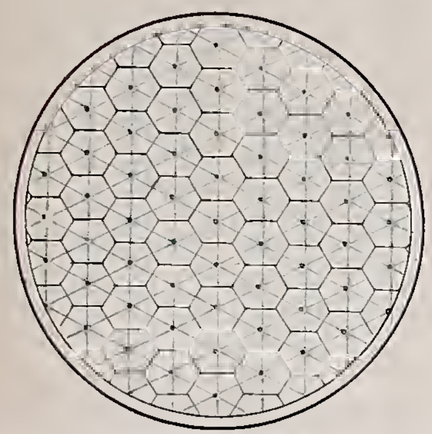
Harrison & Sons, 59 St. Martins lane

DIAGRAMS CONSTRUCTED ON THE DATA FURNISHED BY THE QUARTER MASTER GENERALS PLANS FOR ENCAMPMENT.

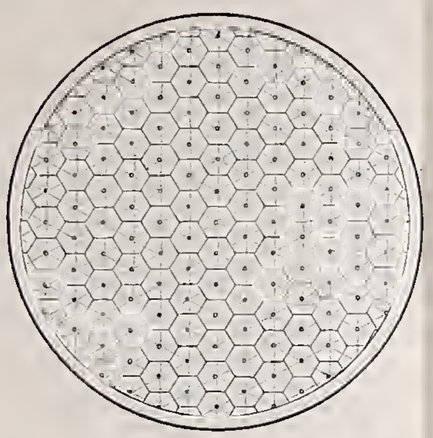
OCCUPIED & UNOCCUPIED AREA.

N.° 3.



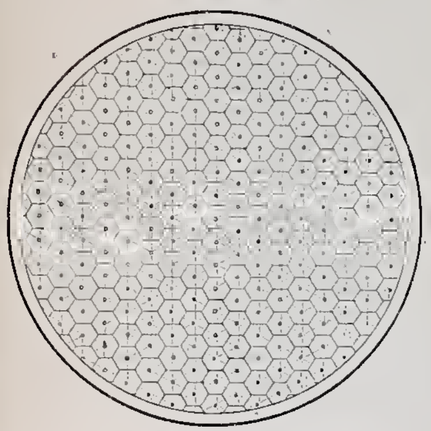
DENSITY *8 · 9 Square Yds to a Person*
PROXIMITY *or distance from Person to Person 3 · 2 Yds including the space occupied by the body*

N.° 2.



4 · 7. Square Yds to a person
2 · 3. Yds. from person to person.

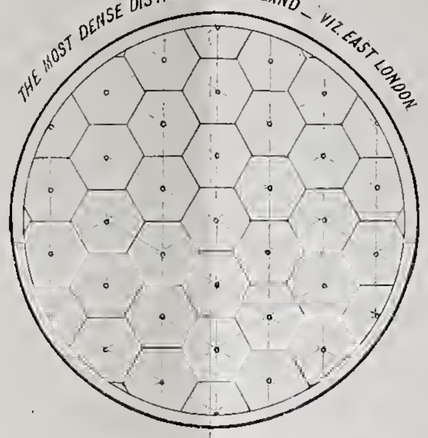
OCCUPIED AREA.



3 · 0 Square Yds to a person
1 · 9 Yds. from person to person.

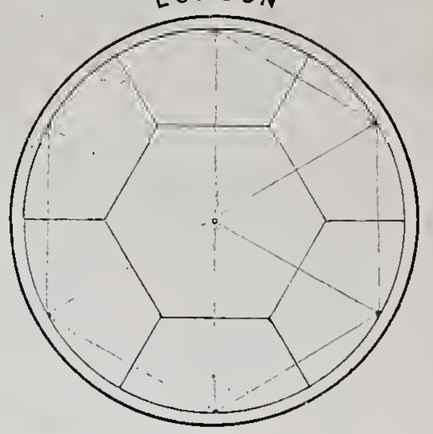
1851.

THE MOST DENSE DISTRICT IN ENGLAND — VIZ. EAST LONDON



17 · 6. Square Yds. to a person
4 5 Yds. from person to person.

LONDON



160 0 Square Yds to a person.
14 · 2 Yds. from person to person.

The Number of Points (·) represents the Density of the Population; the six sided Figures represent the average amount of ground to each person and the blue lines from point to point indicate the Proximity or mean distance from person to person, including the space occupied by the body

T. J. Williams del. General Register Office, Somerset House

APPENDIX LXXIV.

(*Given in by Surgeon-Major Brown.*)

FORM of MEDICAL RECORD BOOK in use in the HOSPITAL of the GRENADIER GUARDS.

No. 5209.—WILLIAM FOUNDS, enlisted on the 29th June 1847, at Shaftesbury, in the County of Dorset, aged $20\frac{1}{12}$ Years ; Trade, Labourer.

No. of		Dates of		Days in Hospital.	Disease.	Promotions, Reductions, Remarks, &c.
Batt.	Co.	Admission.	Discharge.			
1	1	12 Dec./47 -	18 Dec./47 -	7	Catarrh	P. 28 days from 16 Jan./54.
„	„	17 Feb./49 -	22 Feb./49 -	6	Venereal.	
„	„	25 March/49 -	17 April/49 -	24	Venereal.	
„	„	30 June/50 -	11 Sept./50 -	63	Venereal.	
„	„	30 Oct./50 -	4 Nov./50 -	6	Venereal.	
„	„	21 May/51 -	28 May/51 -	8	Bronchitis.	
„	„	11 July/52 -	14 July/52 -	4	Boil.	
„	„	9 March/53 -	19 March/53 -	11	Venereal.	
„	„	27 Dec./53 -	13 Jan./54 -	18	Venereal -	Prisoner.
3	„	9 July/54 -	12 July/54 -	4	Diarrhœa.	

15 *January* 1855, *died at Scutari.*

No. 5226.—JOHN KINCH, enlisted on the 26th July 1847, at Farringdon, in the County of Berks, aged $17\frac{10}{12}$ Years ; Trade, Labourer.

No. of		Dates of		Days in Hospital.	Disease.	Promotions, Reductions, Remarks, &c.
Batt.	Co.	Admission.	Discharge.			
1	7	11 April/48 -	1 July/48 -	72	Febris, C. C. -	Corporal 17 March/52.
„	„	18 March/49 -	22 March/49 -	5	Catarrh -	T. & R. & P. 14 days from 4 Dec./52.
„	„	10 Sept./49 -	14 Sept./49 -	5	Diarrhœa.	
„	„	13 Aug./53 -	16 Aug./53 -	4	Phlegmon(face)	
„	„	6 Feb./54 -	8 Feb./54 -	3	Swelled neck.	
3	„	16 Jan./55 -	20 Feb./55 -	36	Febris, C. C. -	Fm Varna.
„	„	5 May/55 -	24 July/55 -	81	Hepatitis.	

24 *July/55, discharged to Chelsea, Pension* 7*d. per diem,* 18 *months, conditional.*

No. 5252.—JOHN HARRISON, enlisted on the 6th October 1847, at Loughboro', in the County of Leicester, aged $17\frac{1}{12}$ Years ; Trade, Labourer.

No. of		Date of		Days in Hospital.	Disease.	Promotions, Reductions, Remarks, &c.
Batt.	Co.	Admission.	Discharged.			
1	3	10 Dec./48 -	18 Dec./48 -	9	Hernia Humoral	At 4 p.m. 9th off Guard.
„	„	17 Aug./49 -	24 Aug./49 -	8	Venereal -	P. 28 days from 21 Sept./50.
„	„	28 Sept./49 -	3 Oct./49 -	6	Hernia Humoral	P. 40 days from 12 Nov./50.
„	6	26 Dec./50 -	27 Dec./49 -	2	Diarrhœa -	P. 42 days from 10 Mar./51.
„	„	3 June/51 -	5 June/51 -	3	Subluxatio -	P. 84 days from 24 Oct./51.
„	„	15 Dec./51 -	20 Dec./51 -	6	Venereal -	P. 56 days from 22 Sept./52.
„	„	17 Jan./52 -	20 Jan./52 -	4	Diarrhœa -	P. 112 days from 1 July/53.
„	„	17 Dec./53 -	19 Dec./53 -	3	Diarrhœa -	P. 30 days from 9 Feb./54.
3	7	15 Aug./57 -	17 Aug./57 -	3	Ulcus penis, n.s.	

No. 5268.—WILLIAM JOHNSON, enlisted 18th October 1847, at London, in the County of Middlesex, aged $18\frac{2}{12}$ Years ; Trade, Labourer.

No. of		Dates of		Days in Hospital.	Disease.	Promotions, Reductions, Remarks, &c.
Batt.	Co.	Admission.	Discharge.			
2	1	30 May/50 -	31 May/50 -	2	Fever, C. C. -	From Drill.
„	„	26 Feb./53 -	28 Feb./53 -	3	Swelled face -	P. 111 days from 7 Nov./49.
„	„	19 Aug./53 -	26 Aug./53 -	8	Colic -	P. 40 days from 16 Apl./50.
„	„	20 Sept./53 -	22 Sept./53 -	3	Diarrhœa -	Prisoner. *Deserted* 11*th March* 1851. *Rejoined* 24*th Feb.* 1853. P. 168 days from 3 Mar./53. P. 168 days from 15 Oct./53.

31 *March* 1854, *discharged for bad conduct.*

APPENDIX LXXV.

FORM of SANITARY REPORT sent annually to the War Office from all Foreign Stations where Troops are serving.

No. I.—SANITARY REPORT.

To the
Officer Commanding
the *of*

SIR,—I have the honour to forward, for the information of the Right Honourable the Secretary-at-War, the following Sanitary Report of the Troops under my superintendence at the Station of for the year from 1st April 18 , to the 31st of March 18 .

[*In case the Medical Officer is removed from the Station before the termination of the period when his Report should be completed, he will make it up to the day of his departure, and leave it with his successor, who will be held responsible on taking over charge that this has been attended to.*]

By a Return hereto annexed, A, with which you have furnished me, the average strength of these Troops, and the Deaths from all causes among them during the above periods have been as under:—

—	WHITE TROOPS.					Commissioned Officers, including Staff.	BLACK TROOPS.				
	Serjts.	Corpls.	Drmrs.	Privts.	Total.		Serjts.	Corpls.	Drmrs.	Prvts.	Total.
Average strength											
Total Deaths, both in and out of Hospital -											

In these Deaths are included the following, which took place out of Hospital:—

———	WHITE TROOPS.		BLK. TROOPS.
	Non-Commissioned Officers and Privates.	Commissioned Officers. only.	Non-Commissioned Officers and Privates.
Killed in Action - - - - -			
Drowned - - - - - -			
Murdered - - - - - -			
Suicide - - - - - -			
Rupture of Blood Vessel - - - -			
Found Dead, cause unknown - - -			
Sudden Deaths from Apoplexy - - -			
„ „ Coup de Soleil - -			
Here state any other cause of Sudden Death.*			
Total Deaths out of Hospital - -			
Remain to be accounted for, who Died under Hospital Treatment - - - - -			

[*The Commissioned Officers of Black Corps, being Europeans, will always be included under the head of White Troops.*]

* [*The Deaths of Men on Furlough, and Officers on leave, if occurring within the limits of the Command, will also be here stated, and the cause of death specified, if known.*]

The Diseases by which these Deaths, as well as the whole admissions into Hospital in the course of the year, have been occasioned, are specifically detailed in Returns hereto annexed, B and C, whereof the following is an Abstract:—

——	WHITE TROOPS.				BLACK TROOPS.	
	Non-Commissioned Officers and Privates.		Commissioned Officers.		Non-commissioned Officers and Privates.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Fevers - - - - - -						
Eruptive Fevers - - - -						
Diseases of the Lungs - - -						
„ Liver - - -						
„ Stomach and Bowels -						
Epidemic Cholera - -						
Diseases of the Brain - -						
Dropsies - - - - -						
Rheumatic Affections - - -						
Venereal Affections - - -						
Abscesses and Ulcers - - -						
Wounds and Injuries - - -						
Corporal Punishment - - -						
Diseases of the Eyes - - -						
„ Skin - - -						
Other Diseases - - - -						
Total - - -						

[*In this portion of the Return the Medical Officer will be particularly careful that the diseases of White and Black Troops are kept distinct; also that no diseases of Women or Children are included, or of Sailors landed from any of Her Majesty's Ships in a state of Sickness, or of Invalids who may touch at the Station not belonging to any of the Regiments serving in the Command.*]

[*Deaths which take place among Men left in Hospital by Corps on quitting the Island or Command may, however, be included.*]

The Number daily Sick in Hospital at this Station during the past Year has been carefully registered by me, and the average amounts to of the White Troops, and of the Black Troops, as per States annexed, D and E.

Having thus detailed the extent of Mortality and Sickness, I shall next proceed to state how far these may probably have been influenced by the following agencies :—

1.—DUTY AND EMPLOYMENT.

[*Referring to the detail of duties furnished to him by the Officer Commanding, in Return A, hereto annexed, the Medical Officer will state whether the extent or nature of these is likely to have proved injurious to the Troops; whether he conceives the night duties too severe for the strength of the Garrison; whether the parades and drills of the White Troops take place at the hours least likely to expose them to solar influence; whether they are often employed on fatigue or working parties; and any other particulars under this head by which he conceives their health may probably have been deteriorated.*]

2.—BARRACK AND HOSPITAL ACCOMMODATION.

[*The Medical Officer will here describe the Barrack and Hospital occupied by the Troops under his superintendence, specifying the number of Rooms or Wards, the dimensions of each, and the average number of Men quartered therein; also, whether, taking into consideration the nature of the Climate, he deems this accommodation sufficiently ample. He will state whether the buildings are properly ventilated; and if any remarks are necessary as to the Barrack and Hospital Bedding, he will also enter into these details. He will state what provision is made to ensure the personal cleanliness of the Troops, particularly if they are provided with washing troughs, and a proper supply of water for that purpose. He will mention whether the Guard Houses are sufficiently capacious, and if repairs have become necessary in any of the buildings to protect the health of the Troops, he will state whether this has been immediately represented to the proper authorities, and if the repairs have not forthwith been executed, he will annex a copy of his representation with the reasons assigned for the delay.*

[*If there are any Outposts of which the sick come under his superintendence, he will furnish similar particulars in regard to the Barrack accommodation there.*]

3.—DIET.

[*Under this head he will state how the Soldiers' meals are regulated, and of what they generally consist; whether they are plentiful and nourishing, and afford the best variety which the productions of the country, and the rate of pay will admit. He will particularly advert to any alterations which may have recently been introduced in rationing or dieting the Troops, and state his opinion as to the influence they have had on their health. He will state if the Water supplied to the Soldiers for drinking is of a good quality, and whether it requires filtration or any other process before being fit for their use.*]

4.—CRIME AND PUNISHMENT.

[*Referring to the detail of Courts-martial, Crimes and Punishments among the Troops at this Station, furnished him by the Officer Commanding, in Return A, hereto annexed, he will state his opinion how far the admissions into Hospital have been increased by the frequency and nature of the punishments which have thus become necessary; whether any of the Men have been long incapacitated from their duty by Corporal Punishment, or if it has in any instances induced diseases of a serious nature. If any have died of those admitted into Hospital in consequence of Corporal Punishment, he will annex to his Report a full and explicit detail of the case. He will state whether the cells for the Prisoners are in good repair, and if any of the modes of punishment resorted to at the Station appear to operate prejudicially to the health of the Troops.*]

5.—INTEMPERANCE.

[*The prevalence of this vice among the Troops being a generally alleged cause of disease, and always a fertile source of crime and punishment, will here be specially referred to. He will state whether many of the cases admitted into Hospital have been obviously the result of intemperance; also what facilities the Station affords for this indulgence, and how these may be best obviated. Adverting particularly to the amount of surplus Pay at the disposal of the Soldier, as shown in Return A, hereto annexed, and the quantity of liquor which that will purchase at the Station, he will state whether a reduction of that surplus Pay by increasing the expenditure for Messing, would be an advisable means for improving the health and conduct of the Troops.*]

GENERAL REMARKS.

[*He will here state any circumstances not included under the preceding heads which he conceives likely to have affected the health of the Troops during the past year, and offer any suggestions as to the best means of obviating them, and reducing the Sickness and Mortality in future.*]

NOTE.—*In filling up this Return the Medical Officer will be careful not to enter into any particulars regarding the symptoms treatment, or medical history of any of the cases, which it is his duty to detail in his Report to the Director General of the Army Medical Department; the object of this Report being merely to ascertain the extent of the Mortality and Sickness, the diseases most inimical to the constitution of the Troops, and such causes of those diseases as it may be practicable for the Secretary-at-War to remove.*

(Signed)

Surgeon, or Assistant Surgeon.

A.

RETURN of the Strength and Deaths among the Troops serving at the Station of with a detail of the duty performed, application of the Soldier's Pay, and extent of Crimes and Punishments during the Year, from 1st April 18 to 31st March 18 .

1. The Strength of the Troops under my Command at this Station, including Outposts and Detachments to which no separate Medical Officer is attached, has been, during the past year, as under:—

	WHITE TROOPS.						BLACK TROOPS.				
	Serjts.	Corpls.	Drmrs.	Privts.	Total.	Officers.	Serjts.	Corpls.	Drmrs.	Privts.	Total.
1st April - -											
1st May - -											
1st June - -											
1st July - -											
1st August -											
1st September -											
1st October -											
1st November -											
1st December -											
1st January -											
1st February -											
1st March -											
Totals - -											
Average -											

[*To*

The Officer Commanding at the Station of

SIR,—*You are requested to state, for the information of the Secretary-at-War, the particulars specified in the annexed Return, and to forward the same to the Medical Officer in charge of the Troops under your command, for the purpose of enabling him to make up his Annual Sanitary Report.*

I have the honour to be,
Your most obedient humble Servant,
(Signed) B. HAWES.]

[*The Strength of such Detachments from this Station as have a Medical Officer in charge of them do not require to be included here, as they will be stated in a separate Sanitary Report by that Officer, accompanied by a Return from the Officer in Command of the Detachment.*]

2. Of the above strength, the Casualties which have occurred by death at this Station during the above period have been—

	Serjts.	Corpls.	Drmrs.	Privts.	Total.	Officers, including Staff.
Of White Troops - - - -						
Of Black Troops - - - -						

3. The daily detail of duty generally performed by the Troops at this Station has been as under :—

——	WHITE TROOPS.							BLACK TROOPS.					
	Serjts.	Corpls.	Drmrs.	Privts.	Sentries. By Day.	Sentries. By Night.	Officers.	Serjts.	Corpls.	Drmrs.	Privts.	Sentries. By Day.	Sentries. By Night.
Guard at - -													
Do. at - -													
Do. at - -													
Picket at - -													
Do. at - -													
Working Party at - -													
Total on Duty													

4. The Weekly Surplus of Pay available to each rank for personal expenditure at this Station may be taken at the following average, exclusive of additional allowances for Good Conduct or Length of Service :—

——	WHITE TROOPS.								BLACK TROOPS.							
	Serjts.		Corpls.		Drmrs.		Privts.		Serjts.		Corpls.		Drmrs.		Privts.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Stoppage for Messing -																
Do. for Washing -																
Do. for Necessaries*																
Other Stoppages - -																
Total Deductions from Pay																
Pay of each Rank—																
Less Stoppage for Ration																
Remains for Personal Expenditure - - -																

* [*The Stoppages or Necessaries will of course vary materially in individual instances, but the average can easily be found by the Officers in charge of Companies dividing the total stoppages for Necessaries annually by the number of Men in each Company.*

[*If the Troops are not paid in British Currency, the Commanding Officer will state at what rate the Soldier's Pay is converted into the coin of the Country, and whether that corresponds in intrinsic value to the British Currency it is intended to represent.*

5. The number of Soldiers convicted by Courts-martial at this Station during the past year, with the nature of their Crimes and Sentences, have been as follows :—

Crimes.	WHITE TROOPS.—Sentences.											BLACK TROOPS.—Sentences.										
	Death.	Transportation.	To be reduced to the Ranks.	Corporal Punishment.	Loss of Pension.	To be discharged with Ignominy.	Forfeiture of Pay or Beer Money.	Solitary Confinement.	Imprisonment with or without Hard Labour.		Total.	Death.	Transportation.	To be reduced to the Ranks.	Corporal Punishment.	Loss of Pension.	To be discharged with Ignominy.	Forfeiture of Pay or Beer Money.	Solitary Confinement.	Imprisonment with or without Hard Labour.		Total.
Mutiny																					
Desertion																					
Violence to a Superior, and Insubordination																					
Disobedience																					
Quitting or Sleeping on Post																					
Neglect of Duty																					
Drunk on Duty under Arms																					
Habitual Drunkenness																					
Disgraceful Conduct																					
Absence without Leave																					
Making away with Neccssaries																					
Miscellaneous (*see* Art. of War 70)																					
Total																					

[*If any Soldiers have been given up to the Civil Power, a separate note will be inserted of their Crimes and Punishments.*]

(Signed)

Officer Commanding.

B.

RETURN showing the Specific Diseases by which the Admissions into Hospital and Deaths have been occasioned among the White Troops serving at from 1st April 18 to 31st March 18 arranged according to the following Classes :—

Classes of Diseases.	Specific Diseases.	Non-Commissioned Officers and Privates.				Officers only.			
		By each Disea e. s		By each Class of Diseases.		By each Disease.		By each Class of Diseases.	
		Adm.	Died.	Adm.	Died.	Adm.	Died.	Adm.	Died.
Fevers	Febris Quotidiana Intermittens								
	,, Tertiana ,,								
	,, Quartana ,,								
	,, Remittens								
	,, Continua Communis								
	,, Icterodes								
	,, Synochus								
	,, Typhus								
Eruptive Fevers	Variola								
	Varicella								
	Vaccina								
	Rubeola								
	Scarlatina								
Diseases of the Lungs	Pneumonia								
	Pleuritis								
	Hæmoptysis								
	Phthisis Pulmonalis								
	Catarrhus Acutus								
	,, Chronicus								
	Asthma period. conv.								
	Dyspnœa continua								
	Carry forward								

Classes of Diseases.	Specific Diseases.	Non-Commissioned Officers and Privates.				Officers only.			
		By each Disease.		By each Class of Diseases.		By each Disease.		By each Class of Diseases.	
		Adm.	Died.	Adm.	Died.	Adm.	Died.	Adm.	Died.
	Brought forward -								
Diseases of the Liver - -	Hepatitis Acuta - -								
	„ Chronica - -								
	Icterus - - - -								
Diseases of the Stomach and Bowels -	Peritonitis - - - -								
	Gastritis - - - -								
	Enteritis - - - -								
	Hæmatemesis - - -								
	Dysenteria Acuta - -								
	„ Chronica - -								
	Dyspepsia - - - -								
	Pyrosis - - - -								
	Colica - - - -								
	Diarrhœa - - - -								
	Obstipatio - - - -								
	Cholera Morbus - -								
Epidemic Cholera -	Cholera Epidemica - -								
Diseases of the Brain - -	Phrenitis - - - -								
	Cephalalgia - - -								
	Ictus Solis - - -								
	Apoplexia - - - -								
	Paralysis - - - -								
	Hydrocephalus - - -								
	Amentia - - - -								
	Mania - - - -								
	Delirium Tremens - -								
	Epilepsia - - - -								
Dropsies - -	Anasarca - - - -								
	Hydrothorax - - -								
	Ascites - - - -								
	Beriberi - - - -								
Rheumatic Affections -	Rheumatismus Acutus -								
	„ Chronicus -								
	Lumbago - - - -								
	Ischias - - - -								
	Podagra - - - -								
	Odontalgia - - -								
	Arthritis - - - -								
Venereal Affections -	Syphilis Primitiva - -								
	„ Consecutiva - -								
	Ulcus Penis non Syphilitieum								
	Bubo Simplex - - -								
	Gonorrhœa - - -								
	Hernia Humoralis - -								
	Strictura Urethræ - -								
	Cachexia Syphiloidæ - -								
	Phymosis - - - -								
	Paraphymosis - - -								
Abscesses and Ulcers -	Phlegmon et Abscessus -								
	Paronychia - - -								
	Apostema Lumbare - -								
	Ulcus - - - -								
	Fistula in Ano - - -								
	„ in Perinæo - -								
	Carry forward - -								

Classes of Diseases.	Specific Diseases.	Non-Commissioned Officers and Privates.				Officers only.			
		By each Disease.		By each Class of Diseases.		By each Disease.		By each Class of Diseases.	
		Adm.	Died.	Adm.	Died.	Adm.	Died.	Adm.	Died.
	Brought forward -								
Wounds and Injuries -	Luxatio - - - -								
	Subluxatio - - -								
	Vulnus Incisum - - -								
	„ Sclopitorum - -								
	Contusio - - - -								
	Ambustio - - - -								
	Fractura - - - -								
	Concussio Cerebri - -								
	Compressio Cerebri - -								
Corporal Punishment -	Punitus - - - -								
Diseases of the Eyes - -									
Diseases of the Skin - -									
Other Diseases	Cynanche Tonsillaris - -								
	„ Parotidea - -								
	„ Trachealis - -								
	Carditis - - - -								
	Splenitis - - - -								
	Nephritis - - - -								
	Cystitis - - - -								
	Otitis - - - -								
	Erysipelas - - -								
	Epistaxis - - - -								
	Hæmorrhois - - -								
	Tetanus - - - -								
	Diabetes - - - -								
	Hydrophobia - - -								
	Atrophia - - - -								
	Hydrocele - - - -								
	Sarcocele - - - -								
	Hydrarthrus - - -								
	Physconia - - - -								
	Vermes - - - -								
	Scrophula - - - -								
	Morbus Coxarius - -								
	Scorbutus - - - -								
	Dysccæa - - - -								
	Nostalgia - - - -								
	Contractura - - -								
	Eneuresis - - - -								
	Ischura - - - -								
	Dysuria - - - -								
	Aneurisma - - -								
	Calculus Vesicæ - -								
	Varix - - - -								
	Tumores - - - -								
	Hernia - - - -								
	Prolapsus Ani - - -								
	Amputatio - - -								
	Necrosis - - - -								
	Exostosis - - - -								
	Total - - -								

(Signed)

Surgeon, or Assistant Surgeon.

[*Under the head "By each Class of Diseases," it is only necessary to state the Totals of the Diseases included within the brackets. The blank spaces at the end of each are for the insertion of any other diseases which may occur belonging to that class besides those specially enumerated.*]

C.

RETURN showing the Specific Diseases by which the Admissions into Hospital and Deaths have been occasioned among the Black Troops serving at from 1st April 18 to 31st March 18 , arranged according to the following Classes :—

(*It is considered unnecessary to print this Return in full, as it is precisely similar to the preceding.*)

D.

STATE of the Daily Sick in Hospital of the White Troops serving at the Station of from 1st April 18 to 31st March 18 .

Days of the Month.	Total Number dieted in Hospital on each Day of the following Months.											
	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1st												
2nd												
3rd												
4th												
5th												
6th												
7th												
8th												
9th												
10th												
11th												
12th												
13th												
14th												
15th												
16th												
17th												
18th												
19th												
20th												
21st												
22nd												
23rd												
24th												
25th												
26th												
27th												
28th												
29th												
30th												
31st												
Total												
Average												

Average Sick in April		Average Sick in October	
„ May		„ November	
„ June		„ December	
„ July		„ January	
„ August		„ February	
„ September		„ March	
Carried forward		Total	
Which, divided by 12, gives General Average for the whole period			

(Signed)

Surgeon, or Assistant Surgeon.

[*To ascertain the Monthly Averages it is only necessary to divide the total number of Diets by the number of Days in each Month.*]

E.

STATE of the Daily Sick in Hospital of the Black Troops serving at the Station of from 1st April 18 to 31st March 18 .

(*This State is precisely similar in form to that for the White Troops.*)

No. II.—GENERAL SANITARY REPORT.

To the General Officer
Commanding the Troops
in the *of*

SIR,—I have the honour to forward, for the information of the Right Honourable the Secretary-at-War, the accompanying Sanitary Reports of the Troops of the different Military Stations in this during the Year, from the 1st April 18 to the 31st March 18 , of which the following is an Abstract.

[*In transmitting these Reports, the Principal Medical Officer will be careful that they are in every respect complete, accurately filled up, and that any documents therein referred to accompany them.*]

From these Reports, as well as from a Return hereto annexed, A, furnished to me by , the average strength of these Troops, and the Deaths from all causes among them during the above period have been as under :—

—	WHITE TROOPS.					Officers, including Staff.	BLACK TROOPS.				
	Serjts.	Corpls.	Drmrs.	Privts.	Total.		Serjts.	Corpls.	Drmrs.	Privts.	Total.
Average Strength											
Total Deaths, both in and out of Hospital											

[*Black Pioneers to be included under the head of Black Troops.*]

In these Deaths are included the following, which took place out of Hospital :—

—	WHITE TROOPS.		BK. TROOPS.
	Non-Commissioned Officers and Privates.	Commissioned Officers only.	Non-Commissioned Officers and Privates.
Killed in Action			
Drowned			
Murdered			
Suicide			
Accident			
Ruptured Blood Vessel			
Found Dead, cause unknown			
Sudden Deaths from Apoplexy			
" " Coup de Soleil			
Here state any other cause of Sudden Death.*			
Total Deaths out of Hospital			
Remain to be accounted for, who Died under Hospital Treatment			

[*The Commissioned Officers of Black Corps, being Europeans, will always be included under the head of White Troops.*]

* [*This portion of the Report, as well as that on the following page which specifics the classes of Diseases, consists merely of the Totals reported by each of the subordinate Medical Officers under the same heads.*]

The Diseases by which these Deaths, as well as the whole admissions into Hospital have been occasioned throughout this in the course of the past year, are specifically detailed in the Returns hereto annexed, B and C, from which the following state has been compiled to exhibit the results in a more comprehensive form :—

—	WHITE TROOPS.				BLACK TROOPS.	
	Non-Commissioned Officers and Privates.		Commissioned Officers.		Non-Commissioned Officers and Privates.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Fevers						
Eruptive Fevers						
Diseases of the Lungs						
,, Liver						
,, Stomach and Bowels						
Epidemic Cholera						
Diseases of the Brain						
Dropsies						
Rheumatic Affections						
Venereal Affections						
Abscesses and Ulcers						
Wounds and Injuries						
Corporal Punishment						
Diseases of the Eyes						
,, Skin						
Other Diseases						
Total						

Of these Admissions and Deaths, the number which took place at each of the subordinate Military Stations, as well as the mean daily sick there, are stated in the Reports of the several Medical Officers to have been as follows :—

STATION.	WHITE TROOPS.					BLACK TROOPS.		
	Non-Commissioned Officers and Privates.			Commissioned Officers.		Non-Commissioned Officers and Privates.		
	Admitted.	Died.	Daily Sick.	Admitted.	Died.	Admitted.	Died.	Daily Sick
Total								

[*Nothing more is necessary here than to insert the total Admissions, Deaths, and average Daily Sick in each of the Reports, prefixing the name of the Station.*]

The following State will show the composition of the whole force of White Troops classed according to the periods they have been stationed in as well as the relative number of admissions and deaths in each Class, for the purpose of determining whether their liability to sickness or mortality is lessened by length of residence :—

Period of Residence.	Strength of each Class.	Admissions of each Class.	Deaths of each Class.
Under One Year			
1 to 2 Years			
2 to 3 Years			
3 to 4 Years			
4 to 5 Years			
5 to 6 Years			
6 to 7 Years			
Above 7 Years			

[*The Regimental Surgeon at the Head Quarters of each Corps will, by keeping a Register of the number of each Class in the Regiment, and also how many of that Class are treated or die in the course of the Year, both at Head Quarters and on Detachments, be able to furnish the Principal Medical Officer with materials, by combining which, the requisite information will be obtained for the whole force, and the Principal Medical Officer will give instructions accordingly.*]

The influence of the seasons in producing sickness and mortality among the whole force of White Troops in this is shown as follows :—

——	Fevers.		Diseases of the Lungs.		Diseases of the Liver.		Diseases of the Stomach and Bowels.		Diseases of the Brain.		All other Diseases.		Total.	
	Adm.	Died.	Adm.	Died.	Adm.	Died.	Adm.	Died.	Adm.	Died.	Adm.	Died.	Adm.	Died.
April - - -														
May - - -														
June - - -														
July - - -														
August - - -														
September - -														
October - -														
November - -														
December - -														
January - -														
February - -														
March - - -														
Total - -														

[*It is understood that the Principal Medical Officer receives Monthly Reports from each of the subordinate Stations, which will enable him to supply this portion of the information.*]

A Table of the temperature, range of barometer, fall of rain, and prevailing winds during each of the above months, is subjoined, in order to show how far the prevalence or fatal character of these diseases may be attributed to these agencies.

——	Thermometer.			Barometer.			Pluviometer.	Prevailing Winds.
	Max.	Med.	Min.	Max.	Med.	Min.	Quantity of Rain in Inches.	
April - - -								
May - - -								
June - - -								
July - - -								
August - -								
September - -								
October - -								
November - -								
December - -								
January - -								
February - -								
March - - -								

[*If these Instruments are not available at the Station, he will state that as his reason for leaving this part of the Report blank.*]

The number of Troops invalided, or Officers who have obtained Sick Leave from this during the past year have been—

——	Serjeants.	Corporals.	Drummers.	Privates.	Officers.
Of White Troops -					
Of Black Troops -					

I have annexed Returns D and E, specifying the Disease of each Invalid, the period he has resided in the , how long he has been under treatment, and such other particulars as may serve to illustrate his case.

Having thus stated the extent of the mortality, sickness, and invaliding during the past year among the Troops in this , I shall now proceed to notice the causes referred to in the accompanying Medical Reports from the different Stations as likely to have influenced the health of the Troops there.

ALLEGED CAUSES OF SICKNESS AND MORTALITY.

[*Here the Principal Medical Officer will refer to any causes which may be stated in the Reports of his subordinate Officers to have affected the health of the Troops, and will be particular in specifying whether they are in accordance with his own observations and experience. If no such remarks occur it will be unnecessary for him to enter into further details, except to offer any suggestions which may occur to him as calculated to improve the health of the Troops in future.*]

(Signed)

Principal Medical Officer.

A.

RETURN showing the average Strength of the Troops serving in , with the Number who died or were invalided of that Force, from 1st April 18 to 31st March 18 .
The Strength of the Troops employed, as shown by the Monthly Musters, has been during the period as follows:—

——	WHITE TROOPS.						BLACK TROOPS.				
	Serjts.	Corpls.	Drmrs.	Privts.	Total.	Comd. Officers.	Serjts.	Corpls.	Drmrs.	Privts.	Total.
1st April - -											
1st May - -											
1st June - -											
1st July - -											
1st August -											
1st September -											
1st October -											
1st November -											
1st December -											
1st January -											
1st February -											
1st March -											
Totals -											
Average -											

To

The General Officer Commanding the Troops in the of

SIR,—*You are requested to cause the annexed Return to be accurately filled up, and forwarded to the Principal Medical Officer in charge of the Troops under your Command, for the purpose of enabling him to make up his Annual Sanitary Report, for the information of the Secretary-at-War.*

I have the honour to be,
Your most obedient humble Servant,
War Office. *(Signed)* *B. HAWES.*]

Of this Strength the Reduction which has taken place by Death, Invaliding, or Sick Leave, in the course of the above period, has been—

——	WHITE TROOPS.						BLACK TROOPS.				
	Serjts.	Corpls.	Drmrs.	Privts.	Total.	Comd. Officers.	Serjts.	Corpls.	Drmrs.	Privts.	Total.
Died - -											
Invalided - -											
Sick Leave -											

The different Corps in which the Mortality or Invaliding occurred were—

Non-Commissioned Officers, Drummers, and Privates.			Commissioned Officers.	
——	Died.	Invalided.	Died.	Obtained Sick Leave.
Royal Artillery - - -				
Royal Engineers - - -				
Foot - - - -				
Foot - - - -				
Foot - - - -				
West India Regiment -				
Ceylon Regiment - -				
Malta Fencibles - -				
Staff - - - - - -				
Total - -				

(Signed)

Brigade Major.

B.

RETURN showing the Specific Diseases by which the Admissions into Hospital and Deaths have been occasioned among the White Troops serving at
from 1st April 18 to 31st March 18 , arranged according to the following Classes:—

Classes of Diseases.	Specific Diseases.	Non-Commissioned Officers and Privates.				Officers only.			
		By each Disease.		By each Class of Diseases.		By each Disease.		By each Class of Diseases.	
		Adm.	Died.	Adm.	Died.	Adm.	Died.	Adm.	Died.
Fevers - -	Febris Quotidiana Intermittens								
	„ Tertiana „								
	„ Quartana „								
	„ Remittens - -								
	„ Continua Communis -								
	„ Ieterodes - - -								
	„ Synochus - - -								
	„ Typhus - - -								
Eruptive Fevers	Variola - - - -								
	Varicella - - - -								
	Vaccina - - - -								
	Rubeola - - - -								
	Scarlatina - - - -								
Diseases of the Lungs -	Pneumonia - - -								
	Pleuritis - - - -								
	Hæmoptysis - - -								
	Phthisis Pulmonalis - -								
	Catarrhus Acutus - -								
	„ Chronicus - -								
	Asthma period. conv. -								
	Dyspnœa continua - -								
	Carry forward - -								

Classes of Diseases.	Specific Diseases.	Non-Commissioned Officers and Privates.				Officers only.			
		By each Disease.		By each Class of Diseases.		By each Disease.		By each Class of Diseases.	
		Adm.	Died.	Adm.	Died.	Adm.	Died.	Adm.	Died.
	Brought forward -								
Diseases of the Liver -	Hepatitis Acuta - - -								
	„ Chronica - -								
	Icterus - - - -								
Diseases of the Stomach and Bowels -	Peritonitis - - - -								
	Gastritis - - - -								
	Enteritis - - - -								
	Hæmatemesis - - -								
	Dysenteria Acuta - -								
	„ Chronica - -								
	Dyspepsia - - - -								
	Pyrosis - - - -								
	Colica - - - -								
	Diarrhœa - - - -								
	Obstipatio - - - -								
	Cholera Morbus - - -								
Epidemic Cholera -	Cholera Epidemica -								
Diseases of the Brain - -	Phrenitis - - - -								
	Cephalalgia - - -								
	Ictus Solis - - - -								
	Apoplexia - - - -								
	Paralysis - - - -								
	Hydrocephalus - - -								
	Amentia - - - -								
	Mania - - - -								
	Delirium Tremens - -								
	Epilepsia - - - -								
Dropsies - -	Anasarca - - - -								
	Hydrothorax - - -								
	Ascites - - - -								
	Beriberi - - - -								
Rheumatic Affections -	Rheumatismus Acutus -								
	„ Chronicus -								
	Lumbago - - - -								
	Ischias - - - -								
	Podagra - - - -								
	Odontalgia - - -								
	Arthritis - - - -								
Venereal Affections -	Syphilis Primitiva - -								
	„ Consecutiva - -								
	Ulcus Penis non Syphiliticum								
	Bubo Simplex - - -								
	Gonorrhœa - - -								
	Hernia Humoralis - -								
	Strictura Urethræ - -								
	Cachexia Syphiloidea - -								
	Phymosis - - - -								
	Paraphymosis - - -								
Abscesses and Ulcers - -	Phlegmon et Abscessus -								
	Paronychia - - -								
	Apostema Lumbare - -								
	Ulcus - - - -								
	Fistula in Ano - - -								
	„ in Perinæo - -								
	Carry forward -								

Classes of Diseases.	Specific Diseases.	Non-Commissioned Officers and Privates.				Officers only.			
		By each Disease.		By each Class of Diseases.		By each Disease.		By each Class of Diseases.	
		Adm.	Died.	Adm.	Died.	Adm.	Died.	Adm.	Died.
	Brought forward -								
Wounds and Injuries -	Luxatio - - - -								
	Subluxatio - - -								
	Vulnus Incisum - -								
	„ Scopitorum - -								
	Contusio - - - -								
	Ambustio - - - -								
	Fractura - - - -								
	Concussio Cerebri - -								
	Compressio Cerebri - -								
Corporal Punishment	Punitus - - - -								
Diseases of the Eyes - -									
Diseases of the Skin - -									
Other Diseases	Cynanche Tonsillaris - -								
	„ Parotidæ - -								
	„ Trachealis - -								
	Carditis - - - -								
	Splenitis - - - -								
	Nephritis - - - -								
	Cystitis - - - -								
	Otitis - - - -								
	Erysipelas - - - -								
	Epistaxis - - - -								
	Hæmorrhois - - -								
	Tetanus - - - -								
	Diabetes - - - -								
	Hydrophobia - - -								
	Atrophia - - - -								
	Hydrocele - - - -								
	Sarcocele - - - -								
	Hydrathrus - - -								
	Physconia - - - -								
	Vermes - - - -								
	Scrophula - - - -								
	Morbus Coxarius - -								
	Scorbutus - - - -								
	Dysecæa - - - -								
	Nostalgia - - - -								
	Contractura - - -								
	Eneuresis - - - -								
	Ischuria - - - -								
	Dysuria - - - -								
	Aneurisma - - -								
	Calculus Vesicæ - - -								
	Varix - - - -								
	Tumores - - - -								
	Hernia - - - -								
	Prolapsus Ani - - -								
	Amputatio - - -								
	Necrosis - - - -								
	Exostosis - - - -								
	Total - - -								

(Signed)

Principal Medical Officer.

[*This Return comprises merely the Totals reported by the subordinate Medical Officers under each of these Diseases.*]

C.

RETURN showing the Specific Diseases by which the Admissions into Hospital and Deaths have been occasioned among the Black Troops serving at from 1st April 18 to 31st March 18 , arranged according to the following Classes :—

(*This Return is precisely similar in form to that of the White Troops, and it is, therefore, not printed here in full.*)

D.

RETURN of Non-Commissioned Officers and Privates invalided, and Officers who have obtained Sick Leave, of the White Troops, serving in the of from 1st April 18 to 31st March 18 .

Corps.	Rank.	Name.	Period of Residence in the Command.	Disease for which Invalided or obtained Sick Leave.	Period under Treatment.	Whether probable Result of this Climate, or of a previous Course of Service elsewhere.	If an Officer, to what Place and for what Period has he gone on Sick Leave.

(Signed)

Principal Medical Officer.

[*Officers belonging to the Black Regiments will also be included here.*]

E.

RETURN of Non-Commissioned Officers and Privates who have been Invalided or Discharged, of the Black Troops, serving in the of from 1st April 18 to 31st March 18 .

Corps.	Rank.	Name.	Total Length of Service in the Army.	Disease for which he was Discharged or Invalided.	Period under Treatment.	If Discharged, state whether with or without Pension, and the Amount.

(Signed)

Principal Medical Officer.

APPENDIX LXXVI.

Abstract of Instructions to Administrative Officers in the French Military Hospitals.

General Duties and Qualities.

Of the Hospitaliers.

Duties.

Their general duties may be summed up,—in the exertion of their moral and physical faculties in promoting the welfare of the invalids by means of kindness, and attention to their wants, order and regularity in the administration, civility and firmness towards the *infirmiers*, whom they must guide and superintend in the fulfilment of their duties, and in respectful attention to the directions of the medical officers. They must therefore be endowed with honesty, courage, abnegation, sufficient education, ingenuity, and energy of body and mind, in order to take proper measures for the good of the service in case of emergency.

Qualifications.

Officier d'Administration on Duty.

The service of an *officier d'administration* on duty begins at five in the morning in summer, and at daybreak when the days are shorter.

It ends at the same hour the next morning.

During that time he cannot leave the hospital or retire to rest.

Rounds of inspection.

He has to accompany officers or other persons charged with the duty of inspecting hospitals, and to take note of their questions or remarks. He must make frequent rounds of inspection during day and night at irregular intervals; in short, exercise the utmost vigilance that the service is carried on in every part of the establishment with the greatest order and regularity.

Must be informed of all that is going on.

He must be informed of everything that has been done, is being done, or is to be done, in order that he may be prepared to give an account of everything in case of an inspection by the authorities.

Must sit in his office when not on his rounds.

When not engaged on his rounds of inspection he must sit in his office, where the report book must be always ready to be consulted at any moment.

Report to relieving *officier d'administration.*

On delivering over charge to his successor on duty he shall inform him both in his written and verbal report of that which has been done, or is in progress of completion, that the latter may duly proceed with the same.

All reports to be made to the *officier d'administration.*

The *infirmiers majors* and *infirmiers* must bring to the *officier d'administration* on duty all their reports and requisitions, and they shall receive from or through him all orders for the service, so that he will be thus constantly informed of what is going on.

Invested with powers to punish *infirmiers.*

In him is vested the power of inflicting the punishments that the *infirmiers* may deserve during the time he is on duty, being free to consult on the subject with the director or the 1st class adjutant, in cases of doubt or hesitation.

Inspections.

He shall go on his round of inspection at the time of the visits, the dressing of the wounds, and the distributions of food and medicine, to see that everything is properly prepared and proceeds in perfect order, and that no abuse or neglect occurs anyhow or anywhere.

Principal subjects of attention in the performance of the service.

And among the principal objects for his vigilance are, that all the linen having served for dressings be collected; that this and all other dirty linen be returned to their respective stores and depôts; that the delivery of the clean linen be made with due care; that the ptisans, rations, and medicines be properly prepared and delivered, regard being had also to their quality, quantity, time and mode of administration; that the *infirmiers majors* and *infirmiers* evince the utmost exactitude in the discharge of all their duties, at the visits, dressings, distributions, works of cleanliness, &c., &c.; that they carefully tend the patients in their beds, baths, &c., &c.; at their night watch, helping and relieving each other at the proper time; that they are regular in re-entering the hospital at the appointed times, the whole as detailed in the instructions for the *infirmiers majors and infirmiers* with which each *officier d'administration* must be thoroughly conversant.

Good u and pr servati materia

He must also constantly watch and ascertain that all the materials, such as the linen, utensils, furniture, provisions, lights, fuel, stoves, &c., are kept in proper condition and preservation, and used in the proper manner, and with the wisest economy, revising frequently all the lists, and controlling all the supplies.

Adhesi to the r for the servati order.

He must enforce the strictest order in every part of the establishment, and exact from the patients, *infirmiers majors* and *infirmiers*, visitors, &c., &c., the strictest conformity to the rules laid down for each class respectively,

Each day before sunset he will cause the *infirmier major* on duty, or all the others separately, to give him an account of all the most serious cases in each ward, with an exact specification of their respective numbers, &c., and particularly of the prescriptions, in order that he may ascertain whether they have been precisely followed in each case.

Compr hensive reports

Every morning the *officier d'administration* before delivering over charge to his successor relieving him, will make his report, containing a brief and clear abstract of the reports made during the time of his service,—

By the visiting officer.
„ the *infirmier major* on duty.
„ the porter.
„ the non-commissioned officer on guard.

Instructions for the Admission Office. (Bureau des Entrées.)

Chapter 1st.

Necessity of the greatest Exactness in the Entries of the admitted Patients.

Exactit necessa in the a mission

It is extremely important that no error or omission take place in entering the names, and all the particulars of the patients admitted, for the least inexactitude, however apparently of little consequence, may produce very serious results. In fact, if the time of admission, or the number of the company, troop, battalion, regiment, or arm, are not clearly indicated at the time of his discharge, a soldier may be sent to a wrong, and sometimes very distant place, and so, besides creating confusion, the soldier is exposed to the danger of being arrested and punished as a deserter; and the government to needless travelling expenses. Also, if his passage from place to place, or from one hospital to another, be not exactly described, the man may suffer great loss both in money and character.

Import of havi all part culars minutel stated.

Not less important is it that the dates, and the christian and surname be written out in full, as well as the place of birth, parish, district, province, &c., &c., in the event of its proving necessary to make any communication on matters of property, marriage, or succession, either to the parish authorities or the family of the soldier.

The importance of being exact in making out a list of all the effects belonging to any patient admitted, and the right denomination of the complaint for which he is admitted, is too obvious to require further notice.

Chapter 2d.

Requisite Formalities on the Admission of Patients.

Formali for adm sion.

From what was said in the preceding chapter, the *officier d'administration* must be very cautious, in receiving a ticket of admission, to see that it is regular and authentic.

Tickets of admission must be always delivered by the head surgeon, signed by the captain, registered by the treasurer or paymaster, and viséd by the *sous-*

intendant militaire. Sometimes all these formalities cannot be fulfilled, and then the signature of the chief officer in service, and that of the *sous-intendant militaire* will suffice.

Soldiers travelling alone.

Soldiers travelling alone must be furnished with an admission ticket, signed by the commandant of the place, or a staff officer, and viséd by the *sous-intendant militaire*.

Verification of signature.

The *officier d'administration* at the head of the admission office, must verify the signatures of the tickets, particularly when the applicants do not belong to the garrison, to guard against forgery ; and in case of doubt he must refer to the director.

Tickets of urgency.

If a wounded or sick military man presents himself without his ticket, in a state declared by the medical officer on guard not to allow of his removal either to his corps or to the office of the *sous-intendant militaire*, a ticket of urgency may be granted to him, in order that he may receive immediate assistance, provided it be ascertained that he is a soldier, and to what corps or branch of the service he belongs.

If he is on the strength of the garrison, a ticket must be claimed from the corps to which he belongs ; otherwise, from the *sous-intendant militaire*, to whom also are sent, all the papers and the provisonal ticket, that he may complete its validity by his signature, after he has verified the signature of the medical officer testifying to the urgency of the immediate admission of the patient.

Particulars about wounded soldiers, and persons accompanying them to the hospital, to be noted.

Whenever a soldier is brought in wounded, or dangerously ill, it is of the greatest importance to ascertain the most minute particulars respecting the individual, as well as the circumstances relating to the wound, and also the names of the parties accompanying him, to be furnished for the guidance of justice, in case of a legal investigation taking place.

Civilians to receive urgent assistance, and then removed to civil hospitals.

If the wounded or sick man is found to be a civilian, the medical officer on duty will be requested to afford him the most urgent relief, and then to remove him to the nearest civil hospital.

Full particulars on admission-tickets.

The admission-ticket must show, besides the christian and surname of the invalid, his rank or employment, the number of the register-book, and of the annual control book ; the numbers of the company, battalion, or squadron, and of the regiment to which he belongs (his nation, if a prisoner of war), the date and place of his birth, parish, district, and province ; the names and residence of his parents, his personal description, particular marks, &c., &c, ; and his place of destination after his recovery. The ticket must declare also, whether he is on leave, disbanded, or on pension; in the latter case, the amount of pension he receives, and where he receives it.

Admission of half-pay officers and pensioners to undergo serious operations subject to the signature of the *sous-intendant militaire*.

Officers on half-pay can be admitted into military hospitals only in case they have to undergo some great surgical operation, or when labouring under serious infirmities resulting from the fatigues of war. For these, the signature of the *sous-intendant militaire* is necessary, previous to their admission.

The same rule applies to all pensioners.

Dates to be written at full, and rectifications of mistakes initialed.

The dates upon the tickets of admission must be written out in full, and in case of any mistake, they must be rectified and initialed, either by the *officier d'administration* or by the *sous-intendant militaire*, as the case may require. All the dates must be entered in a book.

Admissions on transfer tickets.

Tickets of admission on transfer must convey all the necessary particulars, and if many men are transferred at the same time from one hospital to another, a general list, with all the relative particulars, may be drawn up, from which the new admission tickets are made out.

Should particulars be wanted the director of the hospital shall procure them from the director of the other hospital or from the corps.

Chapter 3d.

Precautions to be taken on the Reception of the Patients and their Distribution into the Wards.

Admission, formalities, and precautions.

On an invalid presenting himself for admission into the hospital, the surgeon on duty shall question him at once, in order to ascertain the nature of his disease, and the ward to which he ought to be assigned.

When his admission is approved by the medical officer the *officier d'administration* having directed him to a comfortable seat, must carefully examine the ticket he bears, cross examining him upon all the particulars requisite to make him certain of the identity of the individual.

Should the invalid be unable to answer, or if any doubt should arise from his answers or other circumstances, he will cause him to produce his pocket book or other papers of a nature to remove such doubts, and if any remain still, he shall report the same to the director.

From the particulars contained in the ticket or list brought from the corps, or from another hospital, a new ticket of admission is drawn up with all the most minute particulars as directed in the preceding chapter. A duplicate or copy is then made out which is called the ticket of issue, because it is delivered to the patient on his going out of the hospital, either cured or transferred to another hospital.

Duplicate of admission ticket or issue ticket.

Inventory of objects deposited to be inscribed on tickets.

On both these tickets an exact inventory must be inscribed of the effects and arms, as well as of any objects of value that he may have on him, and which he will be requested to deposit. Every object and kind of coin must be specified and described on the tickets, and a receipt for them at the bottom must be signed by the *officier d'administration* in order that on his going out there may not be any dispute on the subject. If the patient insists upon denying having anything to deposit, it must be added at the foot of the description of the effects, that he declares that he has nothing to deposit.

Declaration of having no objects of value.

Tableau.

He marks then on the *tableau* (1) of the ward specially appointed for the treatment of the disease in question, the number where the patient is to be placed, inscribes it also at the top of the tickets of admission and of ward after the No. of the Ward, and inserts a label (1) bearing the name of the man in the place corresponding to that he is to occupy.

Number for objects deposited.

Having fulfilled these formalities, a number is given to the invalid, which shows the place occupied by his effects, and which is added to his duplicate or issue ticket, and also to his ward ticket, then he is conducted to the dressing-room, where in exchange for his clothes he receives a shirt, a cap (woollen in winter), a pair of socks, a pair of slippers, trowsers, and a gown.

Clothes deposited.

His own clothes are tied up in a bundle in his presence, and the number he bears attached thereto.

Dirty clothes washed.

Before making up the bundle all dirty clothes must be separated to be washed.

In some hospitals when the medical officer's office is distant from that of the *officier d'administration*, the patient is examined by him after the other formalities have been fulfilled, but the other course is preferable.

As soon as he is installed in his bed the *infirmier* under whose care he is placed, makes a detailed report of all the particulars, and delivers to the dress stores a suit of hospital effects similar to that worn by the newly-admitted patient, out of the suits that he has always in reserve.

Patients severely ill to have first cares.

If there are several patients admitted at the same time the same formalities are gone through for each separately, giving precedence to those more seriously ill. Patients in a very grave state must be taken immediately to their beds, and the necessary formalities fulfilled afterwards.

Quickness recommended in the admissions.

The utmost despatch is to be recommended to the *officiers d'administration* in all these formalities in order to abridge the sufferings of the patients requiring rest and relief.

Chapter 4th.

Book-keeping.

No omission or arrear allowed.

The *officier d'administration* charged with the registers, must be careful that every entry is kept in the most regular and complete order, without arrears of a single day or omissions of any kind.

(1) The tableau and labels will be described hereafter.

Clearness in books necessary.

His books must be clearly, plainly, and neatly written, to render researches and references easy and certain in their results.

There ought to be no erasure, but if one at any time be necessary it must be initialed.

Tickets of admission and issue, or duplicate.

As soon as a patient presents his admission ticket it must be registered, and a copy made out with the addition of an inventory of all his effects, as well as of the number in the ward and the ward assigned to him. These two tickets are placed in two separate envelopes. The first when compared with the register and with their respective duplicates and signed by the medical officers, are sent (in an envelope with the number of tickets contained marked upon it) to the *sous-intendant militaire* for his signature; on their coming back signed, they are filed after they are counted over and their number verified. The tickets of issue on duplicates are the next morning compared with the number of the admissions of the day before, and when found to correspond, are placed in alphabetical order in a box for that purpose to serve for reference when required.

Infirmiers-majors to report transfers daily.

The *infirmiers majors* must every morning after the visit give to the *officier d'administration* an exact account of any transfer that may have been ordered by the medical officers. Every morning at 6 o'clock in summer, and at 7 in winter, the daily movements of transfer, admission, or issue, must be ascertained, registered, and compared with the reports of the *infirmiers majors*, and should any discrepancy be found it must be traced at once to its source and rectified.

Discharges.

Immediately after, the tickets of the men designated to be discharged next day after the visit, are taken out, carefully filled up, put into an envelope, and sent to the *sous-intendant*.

Discharged men to be struck off.

Every morning after the discharge of the men, each must be carefully struck off from the register and the daily statement.

Regularity of registers and accounts of number and movements of patients.

The exactitude and regularity of these registers are of the highest importance, as they form the base upon which all the other accounts are founded.

The nominal account of all the invalids is controlled every day by the numeral, and the daily movements being reported every day on a monthly report, the final addition will show a number of days equal to the total of the days presented by the addition of the daily movements in the course of the month.

So the three monthly movements of each quarter must show a number of days equal to the total of the nominal rolls or current account, by corps, in which are registered all the men admitted, and all those gone out are deducted, showing all the days that every invalid remained during that quarter. It must be borne in mind that the day of the admission of any invalid, whatever was the hour of his admission, is reckoned as a day, while the days of the demise or issue are not reckoned. For instance, 20 days are reckoned for a man admitted on the first, and discharged on the 21st; 13 days for a man who had been admitted on the 4th, and gone out or demised on the 17th of the same month. After registering every day the admission or issues on the register and current account, the *officier d'administration* will count over the men admitted to see that they correspond perfectly with the tickets of admission. It is also a good practice to write an R (for registered) on the corner of each ticket of admission at the time of entering them on the registry, and draw the pen across the R on entering it on the current account, and in the same way a D (for deducted) should be written on the tickets of discharge.

Day of admission to be reckoned, but not the day of discharge.

Chapter 5th.

Demise.

Demise.

As soon as the *officier d'administration* is informed by the *infirmier major* of a man's demise, he will cause to be brought to him the ward or admission ticket, signed by the medical officer who has verified the death. He will then call for all the papers that the deceased had in his bed, his pocket-book, and if needs be the visit book, and take all the measures necessary to verify his identity.

Before drawing the declaration of demise, he will collect all the documents and submit them to the director. Each director must be furnished with a dictionary of all the parishes to verify the orthography and the identity of the parish of the deceased, and in case of doubt or mistake he must communicate with the corps to avoid errors in the registration of the demise and in the notice to be given to the family of the deceased. After the director's verification, the *officier d'administration* draws up the declaration which is sent to the civil authority, registers it in the demise book, and makes out the death certificate. Then they make out together an inventory of all the objects left by the deceased, and prepare the letter of advice for the mayor of the district where he was born or resided. In this letter must be included the details of all the objects left by the deceased for the information of the family. It must point out the formalities to be fulfilled to establish the claims to the property, mentioning the term allowed for sending in the claim, and the time when the sale and the deposit of its proceeds will take place, in case of no claim being made in due time.

Directors to be furnished with a dictionary of the parishes.

Declaration for the registrar entered in demise-book, and notice given to family and mayor of the district in regular form.

Chapter 6th.

Every morning before the meat is put into the pot for the evening distribution, the *officier d'administration* charged with the admissions must establish the *weight estimate* (*la pesée*) of the meat necessary for the next distribution. This (*la pesée*) is the designation given to the return showing the patients that remain, with the addition of those newly admitted, and the deduction of those just gone out, demised, and on low diet.

Preventive estimates of meat for distributions.

On the evening before closing the office the weight of the meat is established for the next morning.

The weight is calculated for all the invalids and *infirmiers* according to the following form:—

Military Hospital of .

Weight of meat 185

Form for meat weight.

Evening.

Invalids	}
Medical and administrative officers	}
Infirmiers	}
Patients admitted	}

Deducted.

Dead	}
On low diet	}

Remain

Meat to be put into the pot

Chapter 7th.

Rules for the Discharge of Men going out.

Discharges and their formalities.

After the evening distribution, for the men of the garrison (if that is the usage) and every day very early for the others, the *officier d'administration* charged with the admissions calls to muster all those going out. If these are very numerous he collects them in an empty ward, or in a court-yard in summer; if not very numerous in his office. They must be accompanied by the *infirmier major*, who must ascertain that they have given up all that belongs to the hospital.

The *officier d'administration* will then proceed to see that they are properly dressed and that they do not go out until seen by the porter.

If there are many going out belonging to the same regiment all the tickets of issue are entrusted to the N. C. officer in charge of the men, or in default to the senior N. C. officer, corporal, or soldier in the lot, in which case the name of the party must be kept to refer to in case of need. Previous to their departure the *officier d'administration* shall see that they

receive each the portions they are entitled to. All these formalities must be gone through with the least possible delay.

Chapter 8th.

Personal Recommendations for the Officier d'Administration, on the Manner of receiving the Invalids, Necessity of preserving Order and Cleanliness in his Office.

Personal duties and qualifications of the *officiers d'administration.*

The *officiers d'administration* must be well instructed in all the particular details of this branch of the service, be always ready to practise them, and to answer with precision any inquiry that might be made. They must be respectful to their superiors, polite to their equals, and kind to the patients, who are to be inspired with confidence and consoled for the loss of the assistance of their relatives in the melancholy circumstance of their malady.

The officers charged respectively with the admission of the invalids and the reception of their effects into the stores will do well to agree with and help each other in the respective discharge of their duties and never absent themselves from their offices, without leaving a substitute.

Chapter 9th.

Admissions on Transfer from other Hospitals.

Transfers.

Fatigued patients to be relieved without delay.

Preparations in advance to receive the invalids transferred.

Invalids requiring immediate assistance to be sent directly to the wards the first thing.

Ward tickets to be made out next, for those not so gravely ill.

Among the patients transferred from other hospitals there are always some very fatigued from the journey in need of immediate relief, and the *officiers d'administration* must first see that they are readily received and attended to. These hospital transfers being generally advised in advance, the *officier d'administration* must consult with the director to have a warm room ready (according to the season and the weather) to which the invalids must be directed. Having selected with the medical officer all the men requiring immediate succour, he will mark them on the transfer paper, and will cause them to be taken into the wards with order to the *infirmier major* to bring back the exact indication of the bed where each has been placed. Having fulfilled this first duty, he shall make out the ward tickets for all the others, marking them out each respectively on the (*evacuation*) transfer paper, and will direct them successively to the dressing room, where they shall deposit all their effects previous to their being sent to their beds. The ward tickets for those admitted on urgency shall next be made out, and a general receipt for all will be signed by the *officier d'administration* after having compared the tickets with the transfer paper, and called out each name, to mark the absent or missing, if any, and exclude them from the receipt. He shall then proceed to make out the duplicates, but before registering them he must first verify in the wards that they are all there installed in the beds indicated for each. The tickets being so verified and completed are compared with one another ; then one is left at the bed of each patient, and the other serves to fill up the pasteboard label that is put on the *tablcau*, and after being carefully registered they are put into the box in alphabetical order.

Ward tickets made afterwards for those admitted per urgeney.

The *officier d'administration* to sign the admission tickets after comparing the papers and marking out those men that might be missing.

Tickets and duplicates.

All these operations must be made with the utmost possible rapidity, and the *officier d'administration* will do well to engage all his colleagues and subalterns to give him a helping hand in the despatch of this business.

Speed recommended.

Stragglers.

The admissions will be vouched in the accounts by the transfer return, which will show all those that were admitted on the same day. If some of the men should arrive the next day or after, having no seperate return or report, on the verification of the cause of their delay, and in case of urgency, a ticket of admission can be made out for them referring to the general transfer return. If the individual cannot justify his delay, and is in a fit state to go to the office of the *sous-intendant*, he must be remanded to that officer with an extract of the transfer return duly certified and signed by the medical-officer on guard ; the *sous-intendant* will then decide if he is to be admitted. The *officier d'administration* must be careful in noting with exactitude all the former transfers from other hospitals that each patient may have undergone, as this serves to account for and justify his absence from the corps.

Discharge by Transfer.

Discharges on transfer.

Transfer reports.

Effects of discharge men.

Preparations for departure of men transferred.

For the departure of a transfer the *officier d'administration* must collect all the ward tickets of the men designated by the medical officer. He makes out from them the transfer report, while his fellow officer at the dressing stores prepares the effects deposited by the patients, to have them ready for delivery before the hour fixed for their departure. The next day before the time of the visit they must be all collected in a warm room. dressed for the journey, then ranged and mustered in the order as on the report, and after receiving their day rations, put into the carriages that are to convey them, taking care that the men more seriously ill be the first accommodated.

Duties of the *officier d'administration* in charge of transfers.

Any transfer of importance should be accompanied by an *officier d'administration*, in whose presence the men are mustered, and to whom the report is delivered in duplicate, to serve, one as issue return for the hospital they leave, and the other as admission return or ticket for the hospital they enter.

The *officier d'administration* in charge of the transfer must see that everything is in proper order, that the conveyance is sufficient and comfortable with straw and tilts ; that the *infirmiers* and the drivers do their duty well, and that everything proceeds with the best possible order.

Chapter 10th.

Further explanations on the Tablets (Tableaux) and the Boxes used for the registering of Admissions.

Tableaux. Tablets, ticket-boxes, &c.

The tablets (*tableaux*) are formed with pieces of tin about two inches and a half wide, fixed upon boards, one inch above the one another, thus forming a rack of as many plates as there are beds in each ward. The plates might be substituted by brass or other wire divided against each number in perpendicular order.

In the interstices between these plates or wires there should be placed a proportionate piece of pasteboard or thick paper, bearing the name, surname, and name of corps of the patient occupying the bed corresponding to the number on the tablet (*tableau*). These tablets are of the greatest utility as references in all circumstances, therefore they must be kept always in perfect regularity.

The box destined for the duplicate (issue) tickets must be large enough to contain easily a number of tickets equal to the number of the invalids that the hospital can contain ; its width must be proportionate to that of the ticket, and its height two-thirds of it, to leave exposed the name and number, &c., so that the tickets being placed therein in alphabetical order can be referred to with great convenience.

Instructions for the Linen and Furniture Stores.

Chapter 1.

Linen-keeper's duties.

The duty of keeping and distributing the linen is one of the most important in an hospital, and the person entrusted with it, being aware of his great responsibility and the confidence placed in him, must endeavour to justify it by his exactitude, watchfulness, and order.

Necessity of a good system of distribution.

It is necessary to form a good system of distribution and return of the linen from and to the stores so that all should come in turn frequently under the eye of the storekeeper, who by his constant attention will find means to ascertain that the linen is carefully used and preserved. The exact quantity will be easily

Book's regularity.

maintained if every piece delivered be duly entered in the register book ; and all those in the stores are well disposed and so arranged that he can at any moment ascertain their state. An account of Dr. and Cr. must be regularly kept with each ward, branch of the service, and washhouse, for the linen that is received or brought back, care being taken that none is ever left in arrear. Besides that for the linen, the storage of all the other utensils of copper, tin, zinc, wood, and woollen cloths require special attention as to the places being well fitted in all respects for the preservation of the materials, and sufficiently spacious to admit of their being properly stored. The accounts of all these objects must be kept with the same regularity as mentioned for the linen. The same for all the other furniture.

Utensils, storage, and accounts.

Furniture, mattresses, &c., &c.

Cares for their preservation.

Negligence to be punished.

One of the special cares of the officers charged with the keeping of the furniture, is that of seeing that the furniture, and specially the mattresses of the deceased invalids are returned in good order and dry. If they are damp they must be put on trestles to dry, but if they are drenched with ejections or stained with blood, they must be undone and washed, both the case and stuffing, if necessary. The causes of such occurrence must be inquired into, and if it is the effect of negligence, which is generally the case, the person whose fault it is proved to be must be severely punished, as having failed in the fulfilment of one of his principal duties, that of attending to the best preservation of the furniture, and the cleanliness and comfort of the patients.

Inspections and reports.

The storekeeper must make frequent inspections in the wards to ascertain that the objects entered in the account really exist, and in what state. Any object that he may find in a deteriorated state must be at once changed, and any special case of negligence, or attention in the *infirmiers majors* or *infirmiers* must be reported to the director for his repression or encouragement for the good of the service.

Chapter 2nd.

Linen.

Administration of linen.

The administration of the linen is perhaps the most important, that being the material the most necessary, the most valuable, and the most abundant in a well-directed establishment.

The different objects must be disposed and classified separately in uniform piles, symmetrically arranged, and of easy access, in a dry and well-locked place.

Chapter 3rd.

Change of the Linen.

Changing linen.

At the time fixed for the change of the linen, the officer rings six bell-strokes to call the *infirmiers*, who hand over to him the lists of the dirty linen that they have to change against the clean.

They are then placed on a rank in the lobby of the storeroom, and each hands over the dirty linen with the usual precautions to ascertain the number and state of the linen delivered from each respectively, causing each to count and spread them all at the same time. When the linen is counted, examined, and placed on trestles, the assistant that has received it stamps the list with the word *right*, or marks on it the observations occurring. The *infirmier* takes it to the storekeeper, who hands him an exactly equal quantity of clean linen.

This operation must be done with the greatest accuracy and quickness, which can be obtained only by the great order and good arrangement of the things, which must be handy and regularly disposed.

Practice of making bundles, to be avoided.

The *infirmiers* must avoid the practice of tying the linen in a bundle into a sheet or other piece of good linen, but must strap them up together with leather or canvas.

Cares for dirty linen.

When the distribution of the clean linen is done, after having put in good order the clean linen store, the storekeeper must inspect the dirty linen store to see that it is made ready for the washing, and that the wet linen is spread at once to prevent its deterioration in case it should remain some time in the stores.

The dirty linen stores should be at some distance from the wards.

Chapter 4th.

Washing of the Linen.

Linen given to wash.

When there is sufficient linen dirty the storekeeper calls the washhouse keeper and delivers it to him, entering in duplicate in the account book all that is delivered.

Officer must superintend the washing.

The storekeeper should follow the linen and see that it is properly washed with the right quantity and quality of alkaline matters, and that it is regularly percolated and cleared. He should take care that the women do their work well, that they do not lose their time, do not beat the linen too much, or better that they do not beat it at all, and dismiss all those who do their work badly or indifferently. He should superintend the use of the soap and fuel, fix the quantities, and enter them in the book kept of the articles of consumption. He should inspect the linen on the drying lines, and cause all that he finds imperfectly washed to be washed over again.

Linen must be well dry and counted up on being returned into the stores.

When the linen is brought back clean into the stores it must be ascertained that it is well dried, and then is counted up as it is put into the empty cases already prepared to receive it.

Chapter 5th.

Classification of the Linen.

Classification of linen.

The storekeeper should classify all the linen under four separate categories, viz. :—

1st. Good or middling.
2d. Requiring little repair.
3d. Requiring much repair.
4th. Past service.

Different classes of linen differently folded.

They must be distinguished at the washhouses by a different manner of folding for each class, and when returned to the stores they will be forthwith either stored or sent to the workroom, or to the loft.

Chapter 6th.

Linen Repairs.

Repairs of linen.

The repair of the linen must form the object of a current account with the needle mistress.

Linen for repair delivered and returned by number and weight.

The linen is delivered to her by number and weight, and she returns it in the same manner and quantity.

Storekeeper to superintend linen repairs and furnish materials, such as thread, needles, &c., &c.

The storekeeper will direct her to keep the work of each needle-woman separately, that he may see the kind and quantity of work that each does, and judge which deserves to be retained in the service, and which to be discharged. He will furnish them all, through the mistress, with the quantity of thread, needles, &c., &c., necesary for each week, keeping an account for all.

Large and small repairs.

For large repairs a special number of hands must be employed to prevent any interruption taking place in the minor repairs, which must go on uninterruptedly and constantly as the linen comes in from the washhouse, with which they must keep pace, without mixing the different batches. The parties engaged in the large repairs shall receive from the storekeeper the necessary quantity of pieces for the repairs. Both the linen to be repaired and the pieces must be weighed separately on delivery, and the linen mended with the remnants afterwards will give the same weight, with some little difference for possible waste.

The repairs must be well sewn, well sorted, and made with intelligence, economy, and nicety.

Also the linen to be cut for the dressing is given and returned by weight. The weighing of the linen is of the utmost necessity to prevent the abuses that frequently take place without such precautions.

Register needlewomen kept, and day's work

The workwomen must be all inscribed in a register and none shall be admitted unless with the permission of the director or storekeeper. The first needle mistress or workwoman shall keep a book in which

she is to note all day's or fraction of day's work made by each workwoman, who must have her separate page.

Chapter 7th.

Linen repairing Work-room.

The workroom for the repairs of the linen, and for cutting the dressing linen, is under the direction of a work mistress.

She keeps an account with the storekeeper, and is responsible to him for the quantity of linen she receives, as well as for the work done by the work-women under her. She shall furnish them with the necessary materials, and inspect all the work they do, to see that it is made properly, and where this is not the case, cause them to undo it and do it over again, deducting from their wages the time so lost. An assistant mistress will help her in the discharge of her duties, and be always there when she is obliged to go out, as it should never happen that both absent themselves at the same time.

They will watch jointly over the conduct and decent dress and behaviour of the workwomen, and accompany them whenever any of them are going to the stores.

They will mark for deduction from the wages any absence of the needle or work-women, besides the time allowed for their meals.

The hours of attendance for the workwomen are as follows :—

From 7 a.m. to 5 p.m. from 1st November to 1st March.

From $6\frac{1}{2}$ a.m. to $5\frac{1}{2}$ p.m. in the months of March and October.

From 6 a.m. till sunset from 1st April to 30th September.

At mid-day they will be allowed an hour for their meal, and from the 1st of April to the 30th September an extra half-hour will be allowed them for rest and refreshment in the afternoon.

At that time they can go out, but must punctually return at the fixed time.

The wages may be rated either by the work or by the hour, and proportionately to the skill of the work-woman. The strictest order must prevail both in the personal and in the material in the work-room.

The different linen either for much or little repair, or for dressing, must be kept in separate presses or chests, and no work-woman must be allowed to leave the place, unless she has first folded and put by her work into the place assigned to each respectively by the mistress or her assistant.

Chapter 8th.

Accounts.

The storekeeper must keep a ledger in which he must open an account for each article of furniture, taking care to leave more space for those that are likely to require more frequent changes. Changes must be noted the same day on which they take place.

Besides the ledger he shall keep a day-book in which all articles are entered in a Dr. and Cr. account under the day's date with the relative prices from the invoices showing all expenes and receipts.

Also he must keep a Dr. and Cr. account with the washhouse-keeper who will keep a duplicate for all the linen delivered or received. Another book must be kept in duplicate with the washhouse-keeper, to register the day's work of the washing people. A similar book shall be kept in duplicate with the linen-mending mistress for the day's work of the workpeople under her. A separate book in duplicate must be kept also for the articles of consumption for each department, such as soap, potash, &c. &c., for the wash-house ; thread, needles, worsted, &c. &c. &c., for the linen-mending workshop ; and as many books as required on the same system to be kept in duplicate with each *infirmier major* or other chief of service, of baths, kitchen, purveying dispensary, wherever there is furniture, or deliveries and returns of supply take place. From all these books the storekeeper must extract monthly statements for the director.

Monthly extracts of books for the Director.

On the 1st January and the 1st July of each year, and oftener, if required, he must make up a statement with an estimate for all the articles of linen, wool, wood, or metal requiring repair, each category separately, with an indication of the old materials which can be employed for the reparations. An *expert's* certificate and signature must accompany this statement and estimate; also a separate statement and estimate, bearing the certificate and signature of the medical officer, must be made for tinning the copper vessels.

Half-yearly states and estimates for furniture and certified by *experts.*

Another statement and estimate with indication of the materials, both new and old to be used, must be made out by the storekeeper and certified by the surveyors' *experts* for the repairs and beating of mattresses, bolsters, &c., &c.

After the mattresses, &c., &c., are beaten, washed, and repaired, the weights and quantities used, and the deficit, if any, for tear and waste, must be all accounted for, and certified with the surveyors' *expert's* signature, for each item particularly.

Beating matresses.

The *expert's* fee and every other expense must be included in the estimates. All changes consequent on these works must be immediately registered.

Expert's fee.

At the Spring season, the storekeeper, with the consent of the chief medical officer, shall substitute the linen trowsers and cotton socks for the woollen ones, which he will cause to be cleaned and repaired, previous to returning them into the stores. At the same epoch he will remove also the second blankets from the beds, leaving in the wards the cleanest, and proceeding to the cleaning and repairing of the others, which must be done immediately, without losing time. After having caused a distinction to be made between those more or less dirty, requiring to be washed with clay, or fuller's earth, or with soap, or even ox-gall, he will inspect them after they are washed, to see that they are properly cleaned, otherwise he must cause them to be washed again before returning them into the stores.

Spring changes of woollen or linen and furniture.

Blankets washing.

The storekeeper shall make frequent visits in the wards, to ascertain that the *infirmiers majors* and *infirmiers* carry out their instructions for the good preservation of the furniture.

Inspection of wards.

Instructions for the Storekeeper of Invalids' Effects.

The storekeeper of the invalids' effects must use, with the help of his fellow officer charged with the admissions, the greatest care and regularity in the registering of all the effects belonging to the patients. The state of the effects can also be distinguished with some initals, such as *N*, for new, *G*, for good, *B*, for bad, and *W*, for worn out, &c.

Care to be given to invalids' effects.

The admission office must be always furnished with the moveable numbers corresponding to the vacant numbers in the effects' stores, and one is stuck upon each bundle.

Numbers assigned.

All the effects must be made into a bundle, with great care, so that none of them get loose and be lost.

Made into a bundle carefully.

The shirts alone are to be left out to be washed, before they are enclosed in the bundle.

Shirts washed.

To prevent mistakes, a cloth number, corresponding to that of the bundle, is stitched upon each shirt before sending it to the wash-house, and when it is returned clean, it is tied up together with the other effects. A special book must be kept to enter the shirts given to be washed, against the name of each patient, and the number on his bundle and the shirt. A duplicate of this book shall be kept by the wash-house keeper. Each day, without delay, these entries must be regulated with exactitude, and each evening all the bundles must be removed from the undressing room into the effects' stores. The same number must be endorsed on the admission and issue tickets bearing the description of the effects deposited.

Cloth number stitched on bundle.

Special book for shirts.

Duplicate shirt book.

Number of bundle added to the admission and issue tickets.

Delivery of effects on issue.

For the issues, as soon as the issuing tickets for the next day are signed, the store-keeper of the effects takes out their respective bundles, sees that they are in perfect order, and delivers them to each, half an hour before his departure, making him recognize and acknowledge the receipt of all his effects in the same state as he deposited them, to avoid every possibility of complaint for the future.

Store-keeper takes care of the effects of demised patients.

In case of demise, the store-keeper will cause all the effects that are found in the ward belonging to that individual, to be delivered to himself; he will add them to his register, putting them with the others in the same bundle in the stores. He will keep a special list for the deceased men, or make a special mark for them on the general list.

Special list for demised.

Arms to be taken care of.

The arms that may happen to be deposited by the invalids should be preserved with particular care, to keep them free from the rust and damp. They must be rubbed before being packed, with a piece of greased cloth, and this should be repeated every month, wiping them clean with a dry rag before returning them at the time of the departure of the owner.

Number on bundle to be preserved.

The greatest attention must be paid that the moveable number stuck upon the bundles is never removed, or detached until the time of returning them to their owners.

Soiled effects to be washed and cleaned.

Besides the regular washing of the shirts, all the other articles must be subjected to a cleaning process whenever soiled with dirt or blood, taking care to attach upon each piece a number corresponding to that of the place assigned to the effects of that individual.

Effects of men under infectious distempers to be subjected to depurative fumes.

All the effects of those having the itch or other infectious distempers, must be first sent to the depurative room, and subjected to the action of the fumes of sulphur or chlorine.

Cleanliness and ventilation of store-rooms.

The greatest cleanliness and ventilation are most important in the stores of the effects, to prevent their being injured and infested by insects, or contracting infectious qualities, or noxious and disagreeable smells.

Beating and brushing effects.

Beating and brushing is much to be recommended, and should in spite of all precautions some bad smell prevail in the room, or in some part of it, an application should be made to the director that he may order the chief dispensary to furnish the necessary chloride to be used in that department.

Chlorine used to disinfect rooms.

Before using this substance, all arms must be removed, to prevent their being oxidated.

Instructions for the Officier de Dépense.

Chapter 1st.

General Duties and Qualities.

Officier de dépense, duties and qualifications.

The post of *officier de dépense* is one of the most important and of the greatest responsibility in the establishment. Having to survey all the provisions brought in for consumption as to their quality, quantity, good preparation, and preservation, he must be a man of tried integrity, of kind but firm disposition, quick understanding, right judgment, and solid memory. He must be a good accountant, and a good judge of the qualities and prices of all the articles of consumption.

Chapter 2d.

Meat, its qualities.

The meat is one of the most essential articles to which the *officier de dépense* has to give his attention.

Good meat must have a fine rosy colour, neither too deep red, nor too pale.

Average oxen weight.

Good oxen should weigh alive not less than 500 lbs., calves not less than 60 lbs. In receiving the meat it must be observed, that the fore and hind quarters are in equal proportion, the hind quarters being the most fleshy.

The meat must be brought in 24 hours after being slaughtered.

Cow and bulls meat, very young calves, old rams and ewes, heads, tongues, plucks, feet, scrag-ends, too pale, too deep, or uneven coloured meat, and the internal fat or tallow, all must be rejected. The meat received must be nicely cut to avoid waste, the bones sawed to avoid splinters.

Bread, its qualities.

The bread when not authorized to be white, must be of a shade not displeasing to the eye; must be made with wheat flour of the first quality, sifted so as to extract 22 per cent. (of bran). Each loaf when cold should not weigh more than 3 lbs, ought to be well raised, having about five inches in the centre, and not more than one or two kissing-crust sides, and on being cut must emit an agreeable smell, and show many sponge-like holes, and have a pleasing flavor. It must be delivered clean and brushed from all strange substance on its exterior, and always rejected if burnt or not sufficiently baked or containing any mixture or having any bad smell or taste.

Wine, its qualities.

Wine must be received with the greatest caution. On making a contract the quality must be submitted to the approbation of the chief medical officers with a sample, and on signing the contract, a number of samples equal to the number of the probable deliveries must be submitted and sealed, to serve as a test at each delivery. Any wine defective in brightness or tasting sour or thick, or detected to be mixed must be rejected.

Rice, its qualities.

Rice must be of the quality known in commerce as common good, the grain whole, transparent, clean, free from the husk, well winnowed. Any rice having a bad smell or being dusty or broken, must be rejected.

Salt.

Salt must be quite dry, and pure from any earthy or sandy mixture, and when dissolved in hot water should not affect its transparency.

Butter.

The butter, either fresh or salted, must be of the best flavour and quality.

Eggs.

The eggs must be examined against the light, to see that they are quite fresh.

Oil.

The oil for burning, must be vegetable and pure.

Candles.

The candles must be rejected unless they have a thin wick, and are quite dry and hard.

Potatoes.

The potatoes must be mealy, and middle-sized.

Vermicelli, rice, gruel, and potatoes to be tested by boiling.

These, as well as the vermicelli, rice-meal, gruel, and all other starchy substances, must be submitted to the experiment of being boiled, which facilitates the detection of any defect that they may have.

Officier de dépense, to consult with the medical officers, and report to the director.

The *officier de dépense*, shall always consult on these subjects with the chief medical officers, as well as with the director, who must be informed of every transaction taking place in the steward's department.

Chapter 3d.

Preservation, and preparation of provisions.

Next in importance to the choice of the quality of the provisions, is their good preservation and preparation.

Cleanliness.

Cleanliness is one of the means best conducive to their preservation.

Slaughter-house.

The slaughter-house must be kept eminently clean, perfectly dry, and ventilated. It is necessary that in summer, the windows, or any other opening, be furnished with frames, upon which thin canvas or network is stretched, to prevent insects from coming in. The blocks, tables, scales, and weights, must be kept in a perfect state of cleanliness. The meat hanging from hooks should never touch the walls, and when necessary to hang it close to the wall, a wicker-work mat should be placed between, to prevent the contact of the wall. These mats must be frequently washed with soda.

Pantry.

The cleanliness of the pantry is not less necessary; it should be kept dry, but not so much ventilated as to dry the bread. The boards upon which the bread is placed must have a wooden rail against the wall, to prevent the bread touching it. The table upon which it is cut, as well as all the other utensils, should be kept with the most scrupulous cleanliness. Everything should be kept under glass lids or covers.

After insuring the good quality and preservation of the provisions, it is necessary to insure also their good preparation, therefore, the *officier de dépense* will use every means to make the chief cook feel its importance, and exert himself to perform his duties in the most perfect manner.

L'officier de dépense must taste and approve what the cook prepares.

Nothing should come out of the kitchen without the *officier de dépense* having tasted it first, and approved. Should he find anything badly prepared or cooked, he shall prevent its distribution, informing the director of the circumstance, that he may apply a remedy.

Things badly prepared should be rejected.

Vessels for cooking or distributing food, inspected.

The *officier de dépense* shall daily inspect all the vessels used for cooking or distributing the provisions, that they are all in a perfect state of cleanliness and preservation, whatever may be the material of which they are formed.

Vessels to contain lamp oil, inspected.

The same care must be had for the vessels containing lamp oil.

Chapter 4th.

Distributions.

Distribution of provisions.

Having ascertained the good quality and good preparation of the provisions, the *officier de dépense* will make himself sure that they are properly distributed.

Provisions delivered to the cook.

After having received from the *infirmier major* the list of all the *infirmiers* that are to receive their food, he will give their number to the cook, and after he has received from the admission office the weight of the meat for the evening distribution, he shall see it weighed, and follow it to see it put into the pot and locked in, giving the key to the sergeant on guard.

He hands over to the cook also the rice, plums, potatoes, salt, &c., &c., and all that must serve for the morning distribution.

Book in duplicate.

He keeps a book in duplicate with the cook, where all that is delivered is put down.

He will deliver to the cook the quantities in abundance, taking as his basis the distribution of the preceding day, and after the distribution when he receives the returns of the new admissions, he compares the numbers of the distributions and the total of the patients, and sees that all the portions in excess are returned to the pantry to be preserved for the ensuing distribution. The same should be done with regard to the low diet, such as rice, plums, vermicelli, vegetables, wine, bread, &c., &c.

The distributions will be performed, as described in the instructions for the *infirmiers majors*, under the direction and survey of the *officier de dépense*, who after the return of the surplus portions into the pantry will put it in good order with the help of his assistant. He will then proceed to make and deliver a report for the director of the distribution executed, and then he will proceed to begin the preparations for the next distribution, that he may do all with leisure and without confusion. Besides his regulating and surveying the use of the provisions he will also control the use of the fuel and of all the articles used by the cook, with whose instructions he must be familiar, to be able to control him in the fulfilment of his duties.

Report to the director after distribution.

Controlling all that is used in the cook's department.

Chapter 5.

Various Details.

Lighting.

The *officier de dépense* has to direct the regularity and supply of the lighting. He has to attend personally the delivery of the oil, which he must see poured into the very lamps or vessels that should be brought to him in trays expressly made. These vessels must be emptied into a special filter every morning, wiped and cleaned before they are filled up again with fresh oil.

The *officier de dépense* shall deliver for each lamp a quantity of oil proportionate to the size of the lamp, the wick, and the length of time it has to burn.

The oil, when impure, is purified by mixing with it a hundredth part of sulphuric acid, stirring it well, and adding to it afterwards an equal quantity of water, stirring it well again. When the oil floats, it is decanted and filtered.

He must have therefore a scale of measures proportioned to the length of the nights for each size of lamp used.

He will cause the wicks to be prepared as described in the instructions for the *infirmiers majors*, always keeping a sufficient stock ready made.

Safe, and preservation of provisions.

He shall give a special care to the safe, and the preservation of the provisions contained in it. He shall take care that the provisions preserved there are always distributed the first at the ensuing distributions.

Report to the director, with vouchers.

Every day he must hand over to the director a report of the distributions and receipts with the relative vouchers.

Duplicate books, in columns.

He shall furnish the cook with a duplicate book having a column for each article, for which he may have to make a requisition in which every requisition shall be noted. He must allow nothing to remain in arrear in his books.

No arrear in books.

He must use his foresight in keeping always a sufficient stock continually in hand, renewing it before it is exhausted so as to be able to refuse any article that is not of perfect quality.

He must keep stock always in hand.

Instructions for an Officier d'Administration superintending a Discharge or Transfer.

Chapter 1st.

General Duties.

Preparations for the Departure.

Departure on transfers.

The *officier d'administration* superintending a discharge or transfer is responsible for all the ambulances under his direction, from the moment of their departure till their arrival at the hospital to which they are directed. He must, therefore, make all the necessary arrangements, that the invalids may suffer as little as possible during their journey, and that everything may be prepared for their relief in case of need. He must, therefore, have a sufficient number of *Infirmiers* under his orders, proportionate to the number of the invalids and the gravity of the cases, and in ordinary circumstances at least two for each carriage.

Inspection of carriages.

He must firstly inspect all the carriages, to make himself sure as to their solidity; that the horses are well shod, well put to, and all in good state to fulfil the journey.

Duplicate report.

He shall receive a duplicate transfer report from which both he and the medical officer in charge will see what provisions they must make, to have the necessary number of carriages, quantity of straw mattresses, blankets, dressing apparatus and materials, food and drink, and one or more stretchers; all these objects he will obtain on requisitions in duplicate from the director, one of which may serve as invoice for the director of the hospital where they are transferred, if the objects are to remain there; if they are returned back the invoice will serve for the *infirmier* in whose charge they may be returned.

Measures to be taken for the comfort of the invalids.

The *officier d'administration* must use his intelligence in making the preparations for the comfort of the invalids on the carriages with regard to the season, and provide shelter against the rain and cold air in winter, and against rain, dust, and sun in summer, making the best of the means at hand.

When all is ready to start he shall cause the worst invalids to be placed comfortably on the carriages, and will then proceed to call out all the names from the nominal roll, causing each to take in succession the place respectively assigned to him, without confusion, as he is called out. Every one must keep his place throughout the journey, and no change of place may be allowed without the *officier d'administration's* special authorization, who will of course grant it on reasonable grounds, and will not oppose friends to be together without a special reason.

Patients equally divided in the carriages.

The number of the patients must be equally divided among all the carriages, and so also the luggage, taking care that all the arms are unloaded, and that none of the effects of the invalids are left behind.

Carriages numbered.

The carriages must be numbered in succession, and each keep the same order during the journey.

The number of each carriage is put down on the transfer report. When all this is done the *officier d'administration* gives the signal to start.

Chapter 2nd.

On the Road.

Carriages to follow each other closely.

The carriages must closely follow one another, and never go abreast. They shall all go a good walking step, without ever trotting or galloping.

Drivers must not stop without leave.

The drivers shall never stop without asking the *officier d'administration's* leave, and he will regulate the halts so as to meet the wants of the patients, and the rest that the horses may require. He will keep in the middle of the convoy, going frequently to the other carriages to see the state of the invalids carriages and horses.

Infirmiers to be in sufficient number and ready to assist the invalids.

The *infirmiers* in proportion to their number must be so disposed as to be always in readiness to give help to those that require it; and each shall be attached to a carriage or carriages, from which he will not be permitted to absent himself for any time.

Officier d'administration to know all particulars of the road, and measures he is to take.

It is necessary that the *officier d'administration* be well informed of all the particulars of the road, about villages, mountains, rivers, woods, inns, &c. to avail himself in procuring the advantages and avoid the inconveniences that they may offer. This knowledge will be of the greatest importance to regulate the halts, which must be as few as possible, with due consideration to the want of rest both of patients and horses.

Halts.

Halts should be made in quiet solitary places in preference to populated villages, where some of the patients or the drivers might be tempted to go about, and indulge in drinking or other irregularity. During the halts he will inspect with the medical officer all the patients and carriages, to provide for their wants and arrange whatever might have got out of order, and to make sure that all are present. With the consent of the medical officer some of the invalids may be permitted to walk part of the way, but they must be given in charge of some non-commissioned officer or the senior in service, and caused to precede the convoy. In going through a village they must get into the carriages or form in regular lines and platoons, that none may straggle.

Provisions to be taken for invalids incapable to continue the journey.

If during the journey any of the invalids should be so unwell as not to be able to continue it, the *officier d'administration* will make the proper arrangements with the medical officer, and shall apply to the mayor of the first town they pass to take the patient under his charge, till he may be conveniently removed to the hospital upon which he was directed.

If the mayor has not convenience to lodge the patient, he must be placed at some inn with one of the best *infirmiers* to take care of him. In both cases the *officier d'administration* shall get a certificate from the mayor or his adjunct, testifying the determination taken and the instructions given with regard to the invalid left.

To avoid all delay for the convoy, either the *officier d'administration* or the medical officer will remain to make the necessary arrangements for the patient in danger, while the other will proceed with the convoy, of which he must take all the direction till the officer remaining behind overtakes them again.

Distributions.

Should it be necessary to make a distribution during the journey, or to pass a night in some place between the two hospitals, the places for stopping must be indicated by the *sous-intendant militaire.*

If the weather is fine the distribution can be made in the open air, otherwise it must be made under shelter. In case of distribution on the road all that is necessary for it must have been prepared before starting, and all relating to it must have been the subject of special instructions from the director.

The portable soup-cakes, or cakes of *consommé* should be used in such circumstances to save time, and because they are easily conveyed. The vessels that may be borrowed in such circumstances must be used and returned very clean, and any damage done to them should be made good punctually together with the price agreed for the hire.

The best means for making these distributions in the shortest time and with the least inconvenience for the patients, must depend on the contrivance and ingenuity of the *officier d'administration*, who will do the best under the circumstances.

Carriages during halts.

If the convoy stops on the road, care must be taken that sufficient room is left for other carriages to pass; if they must stop round a corner, care must be taken that carriages that have to turn the corner may not come suddenly in contact with any of the carriages and thereby produce damage.

The carriages, when stopped, must never be left without a guard to watch them.

If it is foreseen that they must pass the night in some place before reaching the hospital to which they are directed, everything should be prepared beforehand. If it is by some unforeseen circumstance that they must stop on the road, it will lie with the *officier d'administration* to make the best possible arrangements for the comfort of the invalids. Also if by some extraordinary circumstance the necessity should arise for going beyond the intended resting-place, the provisions prepared at such resting-place for distribution, must be taken with them to be distributed when they halt.

Infirmier to be sent in advance to prepare quarters.

On approaching the resting-place, or the place of final destination, it will be useful to send an *infirmier* in advance to announce their arrival, that all may be found ready for receiving them.

Distance between the carriages.

The distance between the carriages must be neither more nor less than that of a horse.

Carriage left behind. Arrival.

If in consequence of some accident or fatigue, some carriage must be left behind, the officer must leave it in charge of one of the most intelligent of the *infirmiers*, taking note of the carriage, and of each of the men with it.

The officer that has the direction of a transfer or discharge convoy, must exert himself that all proceed in the best order, keeping all the men and the horses well provided for and in good spirits by his foresight, benevolence, and good treatment.

Chapter 3rd.

Duties on Arrival.

Arrival.

Convoy to be met and led to quarters prepared.

The *infirmier* that has preceded the convoy, or if he be too tired some other person, must be sent back to meet it, and lead it to the resting-place or hospital, and give the necessary information, that the officer may the better give his orders to the drivers.

Carriages.

The carriages must be led into the court, or in default of a court, they may be left outside with a guard. The patients must be immediately got out with the same order as they have got in, and when all out, they must be called to muster to ascertain their number with the director of the hospital.

Alighting.

Visit to the carriages.

The carriages must afterwards be visited to see that all the effects have been taken down and given to the patients, who shall be asked if they have all their effects. The articles belonging to the hospital shall be given in charge of a trustworthy *infirmier* to take them back unless they are intended to remain where they are.

Duties of *infirmiers* in temporary quarters, &c.

If it is a temporary lodging, the officer must see that the patients are all comfortably lodged, with sufficient air, as also the horses and drivers, and that all have their proper nourishment and rest, to be ready to resume their journey the next morning. One half of the *infirmiers* shall sit up alternately to attend on the patients during the night. If it is the hospital to which they are transferred, after having lodged the patients, the officer will obtain a receipt for the men and effects, on the report of transfer, from the director.

Chapter 4th.

March through an Enemy's Country.

Transfer through an enemy's country.

When a transfer (*evacuation*), is performed in a foreign country and amongst an unfriendly population, the *officier d'administration* must deeply reflect and consult with the medical officer upon the emergency arising of leaving behind any of the patients, which must be done only when the circumstances of the

case render it absolutely indispensable, and when it is utterly impossible to have them carried by the *infirmiers*, or even by hired men of the country. If a patient can be carried by the men of the country, either hired or forced to do so, the greatest vigilance must be practised over them to save the patients from the effects of their awkwardness or unwillingness. In this event of crossing an unfriendly country, the convoy should be always accompanied by a sufficient escort, or a sufficient number of *infirmiers* to act instead.

The *officier d'administration* ought to speak the language of the country, otherwise he must be furnished with interpreters and guides who know well the country they have to cross, and who will give him reliable information.

He must avoid passing through populated hostile towns as much as possible, or being obliged to do so, he must send forward men to predispose the people in his and the patients' favour, by impressing upon their minds the idea that he would be ready to resist an attack. A certain number of guides and videttes should always proceed in advance on the flanks and rear, to explore and forewarn of any danger or surprise with precise information, that he may take in time measures to avoid or diminish the danger that may be threatening. If attacked by a superior force, without any hope of relief in time from any part, the best thing that can be done is to surrender; but if by offering some resistance there may be a chance of attracting some friendly help, he should dispose his available men for the defence to give time for the succour to arrive. The greatest care, however, must be taken not to endanger the lives of the patients by a useless defence. If, on surrendering, the *officier d'administration* be offered his liberty, he must decline accepting it, and remain with his countrymen who want his assistance, as well as the *infirmiers*, whom he must endeavour to have considered as *non-combattant*, and continued in the service of the invalids.

The directors of both hospitals must on their side make all the necessary provisions to facilitate the performance of the *officiers d'administration's* duties, which cannot fail to be very heavy and fatiguing in a journey of some distance, giving his whole energies to the welfare of the invalids entrusted to him.

Instructions on the War Service.

Remarks on the Service of the Army Hospitals.

Flying Ambulance.

The flying ambulance is composed of a light cart placed at the vanguard with two surgeons, one *officier d'administration*, and two *infirmiers* to bring succour wherever it is wanted.

If the nature of the ground prevents approaching it with the light cart, two of the baskets, numbered 2, 3, 4, must be taken out of the carts 2 to 5, as hereafter described, and loaded upon one of the horses of the team, by means of a bât contained in the store cart (*caisson magazin*).

To render this service available, it would be necessary that all the *personnel* be mounted to afford timely succour to the light troops whose march is the most rapid.

Ordinary Ambulance.

The ordinary ambulance consists of five carriages, numbered 1 to 5 as follows. Carriage No. 1, on springs, contains in its body 40 surgical apparatuses, each of which may suffice for 25 ordinary dressings. Between the body of the carriage and the roof are various bandages and apparatus prepared with linen for great and little dressing, lint, splints, and other objects considered necessary for 400 dressings. Under the same bower are placed a dispenser's cantine, an amputation-box, another with reserve knives and two stretchers.

This carriage, whose load is only 850 lbs., having materials for 1,400 dressings, can be used as a light or flying ambulance wherever a carriage has access. The three carriages, Nos. 2, 3, 4, are perfectly identical in their composition. On each of them are stowed :—

1st. One large case, at the back of the carriage, whose lid falls down upon the forage-box, thus presenting a table in front of a press, with compartments containing different bandages and apparatus prepared for use, a box of medicaments for first succour, a box for amputation, a box of reserve knives, splints, pallets, fect and leg bandages, and all the articles necessary for every kind of dressing.

2nd. A box of equal size, No. 8, placed in front of the carriage, contains blankets, aprons, napkins, towels, rope, string, and lint; a box of wax candles, tallow candles, and soap; a bag of tools, and on the top of the lid a spade, an axe, and a pickaxe. The space intervening between these two cases is filled up by 12 cases or baskets, whose size is equal to one quarter of that of the two mentioned ones.

3rd. The cases Nos. 9, 10, 11, 12, 13, and 14, ranged on two lines on the bottom of each carriage, form the inferior plane of that space, and contain, rolled up bandages, compresses, and lint.

4th. Case No. 7, placed on that No. 14, contains copper, tin, and iron vessels for the preparation and distribution of food and draughts.

5th. Basket or case No. 6, placed on case No. 13, contains rolled up bandages, compresses, and lint.

6th. Baskets or cases No. 2, 3, 4, 5, placed on cases 9, 10, 11, 12, are for two-thirds filled up with the same materials, with the addition of two square bottles containing, one a quart of vinegar, and the other a quart of brandy.

The upper third part of these baskets contains an apparatus similar to each of the forty contained in the first or light ambulance carriage,

7th. Lastly upon all these cases and baskets are placed two stretchers and splints. Each of these carriages contains materials sufficient for 2,000 dressings, and its load weighs about 1,340 lbs.

The carriage, No. 5, or store carriage, differs from the three common carriages. No. 1, contains a trepan case instead of the amputation case contained in the others. There is no first succour medicament box, and the quantity of objects contained is not exactly the same. On the top of this box is placed a dorsal basket, *croehet-hotte*. In the large case No. 7, corresponding to the No. 8 of the other carriages, the articles are more numerous, but there are neither cords nor strings, and the wax candles and tallow candles are placed in case No. 1. The tool-case numbered 7 in the common carriages is numbered here 13, and placed on the lower range with cases 12, 11, 10, 9, 8, all containing bandages, compresses, and lint. No. 6, which fills up the third part of the upper plane, next to No. 7, is a *bât* with bridle mounted on a wood yard, under which are stowed a salt box and a barrel of burning oil. On the bât are secured with straps a barrel of brandy on one side, and a barrel of vinegar on the other.

Nos. 3, and 4, are baskets similar to Nos. 2, 3, 4, 5, in the common carriages, each containing a full apparatus, bandages, compresses, lint, brandy, and vinegar.

No. 2, is a dressing canteen, containing neither apparatus, vinegar, nor brandy, but instead an amputation case, a dispenser's canteen, some bandages and vessels.

No. 5, contains a dispenser's subdivision.

This fifth carriage, under the bower of which are placed stretchers and splints, contains 1,500 dressings, and its load weighs 1,400 lbs.

A sixth carriage called the reserve, contains four large baskets of an equal size that fill up all its capacity. The first basket contains an amputation box, another of reserve knives, a copper, some tools, prepared bandages, and other articles used for dressing.

The three others are filled; the second with rolled up bandages, the third with large and small linen, the fourth with lint and tow. The load of this carriage weighs about 1,380 lbs., and can afford 3,500 dressings. There are besides the dispenser's divisions, which are composed of two large cases, forming the load of a carriage on which are stowed the medica-

ments, vessels, and utensils fit for the dispenser's service in temporary hospitals.

Stores for hospital effects are kept in the principal towns of the state, which are supplied by the central store in the capital, and are destined to furnish the materials necessary to the formation of temporary hospitals.

Such are the means intended for the service of the army-hospitals, whose principal duty is to give the first succours to the wounded. Such is the destination of the ambulances attached to each active division, and designated with the name of division of ambulance.

The divisions of the ambulance are of two kinds, viz.—

Infantry division of ambulance.

1st. The infantry division of the ambulance, which is composed, for the *materiel*, of five carriages, No. 1 to 5, and for the *personnel*, an *officier comptable*, an adjutant of 1st class, and one ditto 2nd class; two assistant-adjutants, with three *infirmier majors*, and 17 *infirmiers* at least. These last ought to be 30.

Cavalry division of ambulance.

2d. The cavalry division of ambulance is composed for the *materiel* of No. 1, called light carriage, and No. 5, called store carriage. *Personnel*, one 1st class adjutant, one ditto 2nd class, one assistant-adjutant, two *infirmiers majors*, and at least eight *infirmiers*. These last ought to be 12.

Reserves.

Reserves of ambulance ought to be attached to the head-quarters of each corps of the army, and to the general head-quarters. The reserve for each corps ought to be at least one-half of the *materiel* and *personnel* of the divisions composing it, and that for the general head-quarters, the half of the total of the reserves of all the corps united. By these means the service for the active divisions and for the ambulance-depôts might be secured, but not for that of the temporary hospitals to be established as the army moves.

Divisions and sub-divisions.

The divisions of the ambulance always in motion with their respective divisions can be in case of need further subdivided, that of infantry into six parts, and that of cavalry into three parts. The infantry ambulance division can operate at the same time,—1st, with their light carriage for one section; 2d, with each of the three common carriages for three other; 3rd, with the bât and the canteens Nos. 2 and 3 of the store carriage on the fifth; 4th, finally with the dorsal basket (*croche-hotte*) and the No. 4 canteen of the same carriage on the sixth point.

The cavalry division of ambulance can operate on three points at the same time, by means of the light carriage and the two subdivisions from the store carriage. In this case the two carriages must be always together, lest the store carriage should be lost, particularly as it is deprived of one of its horses used for the bât.

With this possibility of carrying out these divisions still farther, they may suffice for the wants of their corps, but it seldom happens that their resources exceed the wants of their corps. In fact, if the corps operates *en masse*, it occupies a space so extensive as to render it necessary for the ambulance division to spread itself over all the line it forms to be near at hand to give succour where it is wanted; if, on the contrary, the corps or division is subdivided, all the sections of the ambulance may be wanted on different points at the same time.

It is therefore impossible that the divisions of the ambulance should perform any other service than,—1st, the dressing of the wounded, who may then return to their ranks, or walk to the nearest hospital; 2nd, the carriage of the wounded who must, after a provisional dressing, be carried in the arms to the ambulance depôt to be operated or finally dressed.

Ambulance depôts.

The ambulance depôts must therefore be formed from the reserves of each corps and of the general head-quarters.

Out of gun shot.

These ambulance depôts, while they must be sheltered from the cannon, must be near enough to offer the necessary succour to the wounded with the least possible delay.

To move near the lines.

For the same reason, they must be moved nearer as the army proceeds, unless intermediate ambulances are established between these depôts and some nearer hospitals. Also, besides bringing these depôts nearer to the battle field, they ought to be multiplied along all the line occupied by the army. At these depôts must be collected during the battles, all the carriages and *personnel* composing the reserves, but on the proportions established above for their composition, there would not be found in these reserves of the corps d'armée more than the elements for a depôt of ambulance for two divisions, giving to each the same strength as to each of these divisions.

It might be necessary to have a depôt of ambulance after each division of troops; in that event the reserve of the general head-quarters would be found to be insufficient to provide for them, for it would fail in its principal end.

In fact the reserves of ambulance in each corps at head-quarters, and at general head-quarters are established;—1st, to form the ambulance depots; 2nd, to convey reinforcements wherever they are wanted; 3rd, and finally, to replace all the *materiel* or *personnel* destroyed, taken, or disabled. The first object having exhausted the resources offered by the reserves of the corps, there remains only the general head-quarters reserve to meet the two next wants.

These wants may become very great and very pressing either in consequence of the intensity and sharpness of the actions, or in consequence of some vicissitude, or also from the necessity of improvising some intermediate ambulance between the depôts and the temporary hospitals.

From this may be inferred the necessity of rendering the reserves of the general head-quarters equal to the total of the reserves of the corps of the army. This would be the only means to insure the service of an army in all the circumstances that one can reasonably foresee.

To demonstrate it more clearly, we suppose an army composed of three corps, each of which is composed of two infantry and two cavalry divisions. The following table shows the number of carriages and the *personnel* that, on the basis above stated for the reserves, ought to be attached to them.

	Number of								
	Carriages.	Officers in Chief.	Principal Officers.	Accountants.	1st Class Adjutants.	2nd Class Adjutants.	Assistant Adjutants.	Infirmiers Majors.	Infirmiers.
1st Corps of Army - 1st Division of Infantry - -	5	–	–	1	1	1	2	3	30
1st Corps of Army - 2nd „ - - -	5	–	–	1	1	1	2	3	30
1st Corps of Army - 1st Division of Cavalry - - -	2	–	–	–	1	1	1	2	12
1st Corps of Army - 2nd „ - -	2	–	–	–	1	1	1	2	12
Total for the first Corps of Army - - - - -	14	–	1	2	4	4	6	10	84
The double for the two other Corps - - - -	28	–	2	4	8	8	12	20	168
Adding the half of these two totals we shall have the reserve for the three Corps - - - - - -	21	–	1	3	6	6	9	15	126
The half of this last total will form the reserve of the General Head Quarters - - - - - -	10	1	–	1	3	3	4	7	63
Grand Total - - -	73	1	4	10	21	21	31	52	441

The second table presents the distribution both of the *materiel* and *personnel* in the active divisions and in the depôts of ambulance, with the supposition that a single depôt of ambulance suffices for two active divisions.

	Number of								
	Carriages.	Chief Officers.	Principal Officers.	Accountants.	1st Class Adjutants.	2nd Class Adjutants.	3rd Class Adjutants.	Infirmiers Majors.	Infirmiers.
The ambulance for six infantry divisions - - -	30	–	3	6	6	6	12	18	180
Three depôts of ambulance of the same strength - - -	15	–	–	3	3	3	6	9	90
The ambulances for six divisions of cavalry - - -	12	–	–	–	6	6	6	12	72
Three depôts of ambulance of the same strength - - -	6	–	–	–	3	3	3	6	36
Total of the divisions and depôts - - - -	63	–	3	9	18	18	27	45	378
The grand total of the first table is - - - -	73	1	4	10	21	21	31	52	441
The difference between these two totals presents the resources remaining at the general head-quarters, viz. - -	10	1	1	1	3	3	4	7	63

There remains then only the number of carriages, *officiers d'administration*, and *infirmiers* on the last line of the table to perform in the service of the divisions the office of filling up the vacancies caused by the chances of war, of bringing reinforcements where and when wanted, of carrying out the service of the transfers (evacuations) from the depôts of the ambulance to the hospitals of the first line, and finally of establishing the ambulances that may be required between the depôts and the hospitals of the first line.

It is therefore necessary that the reserve at the general head-quarters should be equal to the united reserves of all the corps of the army to be always in a state of efficiency, to satisfy all the probable wants of the corps of the army.

Instructions for the Service of the Field Hospitals.

In the preceding chapters of instructions for *officiers d'administration*, *infirmiers-majors*, and *infirmiers*, their duties and qualifications have been traced with regard to their service in military hospitals. They are analogous in the field service, but differ only in the practice. This service begins from the moment they arrive at the point of rendezvous. While preparing to start they must be practised in all the branches of their service during the marches and on the field of battle. Both the chiefs and subalterns must from that time regard themselves as members of the same family, putting reliance and confidence in each other.

At the stations preceding the marches, the *officiers d'administration* must study all that can be useful to the service they are charged with. In the marches and excursions that they will make, they will learn which are the most advantageous sites, which are the habitations and constructions best fitted for the establishment of temporary hospitals, ambulance depôts, and halts for the transfers (evacuations).

They have to consider the state of the roads, the navigation of canals and rivers, in the point of view of the facilities they may offer for the transfers ; also the difficult or dangerous paths during the day and the night must be examined by them, as well as all that can be of service for the hospitals from the state of cultivation of the country, its productions, industry, and commerce, &c., &c.

The civil and military hospitals must be also the object of their study and attention, with a view to note any improvement introduced or to be introduced therein, in case it should be necessary to send thither some of the invalids.

They should also visit all the other important establishments offering any object of interest.

All their observations should be regularly noted in a journal which they should keep regularly every day, of all that they have done or remarked.

They must always offer every assistance to the military men travelling alone, who may be in want of help.

Ambulance men to be present at the manœuvres to know well how to work and place themselves.

The hospital officers should always attend to the manœuvres, to acquire a knowledge of the movements of the various corps, and to follow them without putting themselves in the way. They will thus learn how to move in bringing their succours whenever and wherever wanted, without meeting or offering difficulties. But the most important and necessary study for them is the thorough knowledge for every one, of all the objects of dressing, and all the material of their service, and their relative position and quantity, as stored in the carriages, that they may know with certainty where to find what is wanted, without uncertainty, doubt, or confusion at the time they are wanted.

Preservation of ambulance materials.

The good preservation of all the material entrusted to them, and the order in their disposition, is a natural consequence of their duties already mentioned, and they must be very particular in observing that all is well and firmly packed, that nothing can be injured by rubbing and jolting, as well as that no moisture can penetrate to the interior of the boxes or baskets.

Conduct of hospital officers.

The hospital officers must always distinguish themselves by their dignified and affable manners, such as become men of so noble a calling as those that are deputed to alleviate the sufferings of humanity.

Their conduct must be always such as to conciliate respect and benevolence in their own country, as well as in that of foreign allies, or even of the enemy.

Duties of the *Officier en Chef* and *Officiers Principaux* in Campaign.

Officiers principaux to be instructed in all the duties of the office, to act in the absence of their chiefs.

The *officiers principaux* having to fulfil the duties of the *officier en chef* in his absence, must be equally instructed in the duties of that office. The first care of these officers must be that of acquainting themselves with the dispositions and characters of the officers and men under their orders, to dispose of and use them according to their individual abilities. They shall ascertain by continual interrogations that they are well versed in the theories and manœuvres with the carriages, and also with the war service, to find them well skilled and drilled each in their respective sphere at the time of their active service being required.

Instruction of *officiers d'administration* and *infirmiers majors*.

They will also direct the *officiers d'administration* to divide their time between their own instruction and that of the *infirmiers majors* and *infirmiers*.

Medical officers to attend at manœuvres for their own and the *infirmiers* instruction.

The *officier en chef* shall request the chief medical officer to send the medical officers to the manœuvres to practice and exercise the *infirmiers* to take up and carry off the wounded, explaining to them the different ways they should act according to the different kind of the wound.

The *infirmiers* should be kept in exercise with marches, carriage and stretchers manœuvres on

various grounds, under the eye of the *officier en chef*, who will attentively watch that no vicious habits creep into the service; and that all understand clearly every part of the instruction imparted.

Officiers d'administration to be mounted.

It will be necessary that all the officers in the *officier d'administration's* department be mounted, without which it would be impossible for them to do the service of the active division, and of the transfers (evacuations).

Improvements always adopted readily.

The *officier en chef* must endeavour to introduce every possible improvement in the service, and will receive kindly every sensible suggestion proceeding from the officers and men under his orders conducive to this object. The greatest affability must distinguish the officers of this branch of the service, and they owe to the men under their orders the example of politeness, kindness, and simplicity of manners, as well as of the most rigorous punctuality and regularity in their reports, clearness, conciseness, and promptness in accounting for their operations, and readiness in volunteering for the service without ever being deterred by perils or difficulties.

Officiers d'administration to abstain from acting as accountants.

The *officiers en chef* should carefully avoid acting as accountants, which would too much complicate their occupations and responsibility, already great enough.

They shall leave that task for the regular accountants, who will transmit the accounts each separately to the *officiers principaux*, who will hand them over with their remarks to the *officier en chef*. These will be then condensed into a general account, with an extract of the remarks, and transmitted to the *intendant general*, to whom the *officier d'administration* will furnish every necessary explanation that they may require, either in writing or verbally.

Officiers of administration to abstain from frequenting places of idle recreation.

The *officiers of administration* will give the example to those under their orders to abstain from all those places of idle amusements to which military men are wont to repair when out of active service. They could not frequent them without neglecting their very important duties.

Inspection of materials and places of ambulance.

The *officiers of administration* must inspect continually all the material stowed on the carriages, to ascertain their right quantities and good preservation, and particularly that of the boxes containing surgical instruments and medicaments of all kinds.

These inspections must always take place after a march or bad weather, to see if any damage has occurred, in order to have it repaired immediately; and also after any consumption of material has taken place for the service of the wounded; the material of all the divisions of ambulance must be completed again from the reserve carriages, which in their turn must be completed from the central depôt as soon as possible.

The *officier en chef* must inspect all the depôts of ambulance and hospitals under his control, to verify the state of the invalids, of the material, and the regularity of the service.

Also during the actions he must inspect with the greatest activity all the depôts and sections of depôts of ambulance wherever the wounded are transferred, to encourage the officers and the wounded, and to supply new material instead of those used up for the dressing.

Two assistants mounted.

He may want the assistance of two mounted *officiers d'administration* in these excursions; he will therefore be accompanied by two of the same mounted, whom he will direct to go wherever he is not able to go himself.

After the action he will give a written report to the *intendants*, where, besides the particulars of the service, he will mention with praise or blame the conduct of the officers and men engaged in the service, who have given occasion for special mention.

In a special report he will mention the quantity of material that should be replaced for what has been used.

The *officier en chef* and the *officiers principaux* will take care to assign to each *officier d'administration*. *infirmier major* and *infirmier* in reserve, the rank upon which he shall march, that they may be ready at the proper time when commanded.

Fatigued men to be readily relieved by fresh men.

The officers and *infirmiers* must be all assembled at the depôts of ambulance, that they may be ready to relieve or replace those that having been actively employed, are fatigued or disabled.

Duties of the Accountants and Officiers d'administration attached to the Divisions of Ambulance.

Officers must acquire the affection and obedience of their subalterns. Position they must take during an action.

We have already endeavoured to show the necessity and utility for all the officers attached to the medical department, to be kind and polite towards one another, either superior, equal, or inferior. It is certain that those are better obeyed who know how to gain for themselves the attachment of their subordinates.

The *officiers d'administration* and the *infirmiers* must endeavour to place themselves as near as possible to the combatants, to be ready to remove the wounded as soon as it can be done after they have fallen. The smoke and the movements of the troops may increase the difficulties of their service, but their zeal and ingenuity will contrive to find means to come to the help of many who would otherwise perish. They must endeavour to succour first those that are more dangerously wounded, never abandoning a wounded man so long as he gives the slightest sign of life.

Name of wounded man to be ascertained, arms preserved if possible.

They must try to ascertain and note first, the name of the man, and to put on his stretcher his arms and effects, the loss of which might concern him.

Speed in removing wounded.

The removal of the wounded must be done with the greatest possible speed compatible with the state of the man, whose pains and weakness must be duly considered, to avoid increasing them. They must be provided with a can full of wine and water to satisfy the thirst felt generally by the wounded, and to revive their spirits when too exhausted. They must have also scarfs or bandages to put on the wounds to prevent or diminish the bleeding during their transport. Their return empty after depositing the wounded must be at running step.

Wine and water to be at hand to quench the thirst or revive the spirits of wounded.

Scarf or bandage to check the bleeding.

Running step on return.

To judge and be sure that the *infirmiers* perform properly their duty, and to direct them, the *officiers d'administration* must follow or lead them at sufficient proximity so as never to lose sight of them, to cause to be immediately replaced those that may have fallen, and to proportion both men and litters to the want of the moment. They will, with their example and orders show and direct the men to offer every possible assistance to those who suffer, without timidity or cowardly precautions for themselves, or useless or foolish bravados, reserving themselves to do good service without selfish or vain feelings.

Officiers d'administration to follow *infirmiers* on the field to direct them, or replace them if some fall, or encourage them with their example.

The *officiers d'administration* must show by their example and demeanor the true spirit with which their service must be animated, doing even themselves the work of the *infirmiers* if the event should make it necessary.

Officiers d'administration to know well military division's movements. General direction with the *sous-intendant*.

The *officiers d'administration* attached to the ambulances of *divisions mobiles* must be well acquainted with the division's movements, to follow them with the necessary *materiel* and *personnel* of ambulance, and subdivide it in proportion to the subdivisions of the corps.

The orders for these operations should depend on the *sous-intendant*, but the director of the ambulance will be always justified in submitting to him his opinion on what he thinks useful and expedient.

Director to act for him in his absence.

If the *sous-intendant* be not present, he will act on the instructions he has received from him, and on an emergency act for the best on his own responsibility.

Light service of ambulance.

According to the nature of the ground, and the strength of the detachments, a light carriage shall be detached, or a common one, or two baskets on a horse, or a single basket carried by an *infirmier*, secured either on the bât or the hooks on the carriage, No. 5. Each carriage should be accompanied by an *officier d'administration*, and at least six *infirmiers*, but in default of *officier d'administration* an *infirmier*

major, and not less than three *infirmiers* are necessary for detachments, furnished simply with baskets. For these duties the strongest and most intelligent men should be picked out.

As said above, the greatest possible proximity is to be recommended for the ambulances of divisions to those corps. It is impossible to determine with precision the distance to be kept, but in general half a cannon shot is considered to be the maximum of the distance or the range of the naked eye that will allow of distinguishing a man fallen on the ground from a man on his feet.

A detachment ambulance must be always near enough to the corps not to be exposed to be cut out by the enemy.

The *officiers d'administration* must endeavour to take down from the carriages only what is strictly neeessary for the service, and avoid laying down anywhere the cases out of them, but must keep always as much as possible everything on the carriages ready to start at a moment's notice, without exposing themselves to be obliged to leave any part of the effects on the ground in ease of a rapid movement being necessary.

The *officiers d'administration* are responsible for all the losses they could have avoided.

Duties of the *Officiers d'Administration* attached to the Depôt of the Ambulance.

The duties of the *officiers d'administration* attached to the depôts of ambulance, are the same, with the only difference resulting from their position being less moveable. The movements of the depôts should take place only when the army makes such movements as would leave the depôts at too great a distance to make it po ssible for the *infirmiers* to carry thither the wounded.

The *sous-intendant* must direct these movements as well as the service of the carriages to transport the invalids from the depôts to the temporary hospitals, or other place after the dressing.

The depôts of ambulance being destined for the dressing of all the severe wounds, and all surgical operations, must be out of, or rather sheltered from, cannon shot; still sufficiently near the divisions to fatigue the least the *infirmiers* carrying the wounded, and the wounded that can go there alone.

They must be placed in a well-known and easily accessible locality, and well furnished by the *officier d'administration*, not only with all the necessaries for dressing the wounds, but also with new straw beds, a pot for making broth, hot water, and drinks, but they must not take out of the carriages more than is strictly necessary for use, to be always ready to move at the shortest notice.

The *officiers d' administration* attached to these depôts must be particularly careful in keeping with the greatest exactness the transfer papers of the invalids in order and ready for despatch as soon as they are sent to the other hospital. If the time or the state of the individual does not permit to make the transfer paper perfect, it shall be done as perfectly as possible, including in it all particulars, and especially the name, number of corps, and of attestation, and the description of the arm to which he belongs.

The less seriously wounded shall be transferred soon after their wounds are dressed, all the instructions prescribed above with regard to the manner of conducting the transfer (evacuation) convoys, being carefully followed.

Those requiring some amputation or other operation, or whose wounds are very severe, must be retained longer, according to the exigency of the case.

In these depôts all the qualifications of a good *officier d'administration* must be elicited. His kindness to the wounded, and to his inferiors, his activity in providing all necessaries, surmounting the great difficulties arising from the state of isolation where these depôts are frequently established far from the inhabited districts, and above all their regularity in disposing on the carriages the objects wanted, and finding them where they are stowed without confusion or loss of time, will prove their fitness for such important duties.

Rest for *infirmiers*.

The officers and *infirmiers* who have been engaged very actively in the removal of the wounded shall find in these depôts a little rest and refreshment to be enabled to return the stronger to their work, and in case of great exhaustion they shall find here some comrades that will volunteer, or will be ordered to change alternately their place with them, vying with each other in alleviating the sufferings of the wounded. To those already fatigued by the active service on the field, and those of weaker constitution the direction of the transfer (evacuation) convoys must be entrusted, to retain for further field service or harder work, those that are still fresh and robust.

Duties of *Officiers d'Administration* in Temporary Hospitals.

Division and depôt ambulances.

The division and depôt ambulances require a service so active and so subject to circumstantial modifications that no very great regularity can be looked for in them, which in some cases might even prove a bar to the quickness that must principally distinguish those branches of the service.

It cannot be so in the temporary hospitals, where all must be modelled upon the military hospitals, and everything done to afford the greatest possible comfort to the invalids retained in them precisely because they are very severely ill. The want of mattresses must be supplied with abundance of straw.

Danjon machines.

It is specially in these hospitals that the so-called Danjon machines should be kept, they having the advantage of raising a wounded man, and rendering every part of the body accessible without the least shaking, while however dexterous and skilful may be the *infirmiers* and the officers they can never act so steadily and uniformly as the machine, or inspire the patient with such a sense of security.

Registration.

The registration of the invalids must be completed in the temporary hospital, due regard being had to the susceptibility and impressionability of the wounded, who must not be alarmed or fatigued by the questions that are necessary for this purpose.

Temporary hospitals.

Temporary hospitals are generally established in buildings constructed for other purposes that are adopted for this use, if presenting sufficient accommodation.

Space and ventilation.

In selecting such localities, special attention must be given to the space and ventilation of the rooms, and in placing the invalids in them the necessary quantity of respirable air must be provided for them.

Cubical capacity of air.

Twenty-two cubic yards of air is the minimum that should be secured for each patient in well-aired places, but in low situations 30 or even 40 are indispensable. The first thing, therefore, must be to ascertain the cubic capacity of the room, which can be easily done in the following manner:—

1st. By taking the dimensions of each room or ward in length, width, and depth.

2d. By multiplying the length by the width, and the product of these dimensions by the depth.

3rd. By dividing the total product by 20, 30, or 40, we shall have in the quotient the number of the beds that can be placed in it. In the choice of these localities the medical officers are to be consulted for the salubrity, and the *officiers d'administration* for the convenience of the service, and as it may sometimes happen that the *officiers d'administration* are called to select a place without the possibility of consulting with a medical officer they must, as part of their duty, make themselves familiar with the principles of hygiene in this and the other points affecting the health of the soldiers. No consideration either of economy or convenience should ever induce them to crowd the patients together, however unaffected with contagious complaints, it having been ascertained that the simple fact of being crowded is one of the principal causes of the increased mortality in the hospitals, while in the

badly closed huts the mortality is frequently less than in the crowded and confined rooms.

Clothes to be mended or sent on to the next hospital with the patient.

In the temporary hospitals, the *officier d'administration* will cause the clothes of those that are likely to remain for some time to be mended, all tears that may have been made in them in consequence of the wounds being carefully repaired. The clothes of those that remain only a short time are sent on to the directors of the other hospital whither the invalid is directed, care being taken to mention in the transfer-paper that the clothes want mending. In proportion as the hospitals are more distant from the line of operation so their regularity must increase, they having to experience no changes so sudden and unforeseen as those that are nearer; so in those removed one or two degrees further than the ambulances the utmost regularity must be followed in all that regards the welfare of the invalids, and the civil formalities. In doing this they must abstain from every useless expense, limiting themselves to what is strictly necessary for the time, as they are always subject to be ordered to remove, in which case the expenses would be lost.

Useless expense to be avoided.

Also for the furniture of the temporary hospitals it will be better, if possible, to hire rather than buy them; but if it is necessary to buy them they must buy the lighter and most easily transferable, and when woodworks are required to be made they must be put together with screws instead of nails, in order to undo them more easily, without injuring the parts of the wood. The *officiers d'administration* must in short consult always the strictest economy in all things, and have always present before their mind the possibility of a sudden removal.

Arms to be examined, unloaded, and ammunition deposited.

Finally, the directors of the hospitals shall cause all the arms of the wounded to be examined and unloaded as well as all the cartridges and ammunition to be deposited against receipt at the nearest park of ammunition; thus all accidents may be avoided.

Instructions for the Service of Transfer (Evacuation).

Transfer papers.

In the instructions to the *officiers d'administration* we dwelt at length on the necessity of their exerting themselves, and using every effort to make out all the transfer (evacuation) papers as completely as possible. Its importance with regard particularly to family interests has been pointed out, for which reason the *officiers d'administration* will prevail upon all their subalterns, and inculcate on all the importance of the same, that the latter may help them in procuring the surest information, whenever there is any difficulty in ascertaining the name, &c., of a wounded man.

The greatest difficulty may be found sometimes in completing the transfer papers of the men seriously wounded, who are transferred from the depôt of ambulance to the first temporary hospital, when they are not able to speak and themselves give the necessary information. In such cases every effort should be made to obtain it from other sources, and to fill up the registers and other papers as soon as possible. All the duties of the *officiers d'administration* charged with the care of transferring the men are amply described in the instructions for *officiers d'administration* charged with the transfers on the road.

Light or Flying Ambulance.

Flying ambulance.

The object of the light or flying ambulance is that of offering the means of arriving rapidly wherever there is a wounded man to save, however distant from the depôt of ambulance; to attain this object it is necessary to have some very light carriages, capable of containing a proportionate quantity of dressing materials and medicaments, as well as a certain number of wounded.

It is therefore proposed to add to each division of ambulance, as above described,—

1st. Four saddle-horses, to be mounted by four *infirmiers*.

2nd. A fifth horse to carry the canteens of carriage No. 5.

3rd. A light carriage on springs and two wheels, drawn by two horses, as invented by M. Larrey.

This carriage should have a box in front to carry an *infirmier*, who should attend to the wants of the wounded. The front and back boardings should open as folding-doors to facilitate the ingress and egress of the wounded. In each of these doors a window opens with a glass on a sliding frame to procure ventilation, and give the *infirmier* on the box the means of seeing and providing for the wants of the invalids. The interior of this carriage should be all stuffed, the boards forming its frame or bottom inclusive. These boards should slide in grooves, and be inserted each in distinct grooves so as to draw them in or out separately. They might be broken at one-third of their length and held together by strong hinges, and supported at different angles by hooks, to give to the invalids the position best suited for their wounds. A stretcher or litter should be hung at the left of *Larrey's carriage* along the body of it, and on the right a *Regnier's chair*, made to fold up. In cases of difficult roads, an axe and pickaxe should be stowed on this carriage to remove obstacles.

The number of these carriages can be multiplied, or the number of the mounted *infirmiers* and stretchers or chairs.

These flying ambulances should be used only for those wounded, that cannot move by themselves.

The other common carriages, usually kept in readiness for the transfers, will suffice for all other service out of the line of action.

APPENDIX LXXVII.

Abstract of Instructions for the Infirmiers Majors in the French Military Hospitals.

Chapter 1st.

Their Qualifications and Duties.

Qualifications.

The *infirmiers majors* must be men zealous for the service, honest, sober, obliging, civil, subordinate to their chiefs, well conducted, and clean. Their principal duties are to instruct the *infirmiers* patiently and carefully, to train them in the details of their service, to make them carry it on with punctuality and in harmony with each other, with due respect towards their superiors, urbanity towards the patients and one another, avoiding both familiarity and rudeness.

General Duties.

Responsibilities.

The *infirmiers majors* are responsible for the execution of the orders they transmit. They are obliged to see that no abuses creep into the distribution or consumption of the provisions, that good care is taken of the buildings and furniture. They have to regulate the fires and lights; in short, to give their constant attention to all that may promote regularity, cleanliness, and salubrity.

Time of attendance.

The *infirmiers majors* on duty must be in constant attendance night and day, the others during the day time only.

Uniformity in service.

The *infirmiers majors* ought to concert together in order to promote uniformity in all measures, so as to facilitate the service in case of transfer from one division to another of either the *infirmiers* or the *infirmiers majors*. They ought also to arrange so that the *infirmiers* of the different divisions or wards should feel themselves under the *surveillance* of any of the *infirmiers majors* that may happen to be present at the time, and no *infirmier major* should ever absent himself without being certain that one of his colleagues shall act in his place during his absence.

Mutual assistance.

Chapter 2d.

Visit and Dressing.

At the time of the visit and dressing the *infirmiers majors* must see that perfect order and silence are kept in each ward, that all the *infirmiers* are at their posts, that necessaries wanted, such as poultices, decoctions, lint, &c. &c., be found ready, not neglecting the cloths (*alèzes*) or wash leathers, that some dressings may require in order to save the linen and the mattresses. During the dressing, and immediately after, all the linen used must be collected in the dressing baskets and carried to the great *depôt* basket. This being placed on a truck, the *infirmier* accompanied by an *infirmier major* will carry it to the wash-house, every morning and evening after the dressing, seeing that none is forgotten or abstracted. At the time of the visit and dressing no stranger should be admitted, every patient should be in his bed and perfect silence observed.

At the morning visit all the *infirmiers* who were on duty during the preceding night shall be present to answer questions that the medical officers may wish to address to them.

The *infirmier major* must take notes of all the prescriptions that fall under the *infirmier's* department, such as foot-baths, baths, &c. for each patient respectively; of every patient requiring special care in the interval between the visits, and shall see that he is attended to, and should besides keep a special printed book with the number of the beds and the different aliments that each patient is to receive, putting down the kind and the quantity prescribed and seeing that the distribution is made accordingly. At the time of the visit, the *infirmier major* shall put down the names of the men to be discharged, receive back their admission tickets, and send for the duplicate at the admission office. Attention will be given to the intelligence and aptitude shown by the *infirmiers* in making their reports on the daily occurrences and the state of the patients, during the interval between the visits.

Chapter 3d.

Distribution of the Aliments to the Sick.

After the visit, the distribution of the food must be proceeded with.

Before commencing it, the *infirmiers* should change their aprons and wash their hands, and the patients also if not disabled; a sufficient supply of water should therefore be furnished to the wards (and tepid water from the 1st October till the 1st of June), about half an hour before each distribution. Care must be taken that all the vessels be ready with the utmost regularity on trays or boards at the foot of the beds, and all in a line, in order to facilitate the distribution and control.

At the time of the distribution every patient shall be in his bed or between two beds, so as to prevent inconvenience to those in charge of the distribution.

The distance allowed between the bread and the wine, &c., shall not be more than that of one bed in advance, and the *infirmier major* should keep always in the rear, to verify that each receives his assigned portion.

All that remains in the baskets or wine cans must be returned to the pantry.

Care should be taken that the broth is not served out before the bread to the patients; and to avoid double deliveries, each *infirmier* charged with the distribution of meat broth shall be furnished also with a list of the numbers of the patients to whom meagre broth was prescribed.

The *infirmier* who distributes the broth shall have a pail containing 15 or 20 quarts (*litres*), to suffice for 30 or 40 patients. The distribution should be so regulated that each division of patients be served the first in turn, and each patient in his division be served the first in his turn.

All that remains must rigorously be returned to the kitchen. The distribution of the meat or of light aliments must next be attended to (light aliments are rice, eggs, plums, vegetables, &c.) The distribution of these, when few, is done with flat baskets, into which the plates are brought up from the kitchen disposed in regular order according to the succession of the beds to which they are to be delivered, to prevent mistakes. If many of the latter are prescribed for the same ward they must not be brought in separate dishes from the kitchen, but in large recipients to be distributed at the beds, taking great care that the variety of the light aliments does not create confusion, and ascertaining at the end of the distribution that all have had the quantity and quality prescribed, by asking loudly if every patient has received his portion. In case of complaints they should be verified without delay, and repaired immediately. During the time of the distribution and of the consumption of the aliments the strictest silence and quiet must be maintained, and every patient shall be in his bed or close to it, and no exchange, participation, sale, or any kind of barter can be permitted with regard to the food respectively assigned to each patient. Any infringements of these rules should be reported by the *infirmiers majors* to the medical officer and to the *administration*. As soon as all the baskets, pails, &c. used for the distribution are returned to the kitchen or the pantry, the cleaning of the wards shall begin. The vessels, spoons, &c. must be washed in hot water, rinsed, dried, and replaced. The beds shall be put in order, and all remains of the meal swept away, and a proper ventilation procured.

Meat and light aliments.

Reclamations.

Order in the consumption, caution against abuses.

Cleaning after meals.

Beds arranged, wards swept.

Chapter 4th.

Immediately after the morning visit, the *infirmier major* will direct the *infirmiers* to make out a clear list of all the dirty linen to be changed for clean, which he shall see delivered out, and then he will count over the linen returned.

Linen changed.

All woollen blankets or cloths must be beaten before they are returned into store, and washed if soiled.

Woollen cloths beaten.

No patients shall be allowed to keep either arms, sticks, or any other effects in the wards, the *infirmier major* taking care that any such objects be deposited in the store room.

Arms, sticks, &c. forbidden.

On the admission of each patient the *infirmier major* shall see that the *infirmier* to whom he is confided be furnished with a gown, trousers, shirt, cap (woollen in winter), socks, and slippers, which every patient is to receive; these objects being duly restored on his departure or demise. The greatest attention is to be paid that the feet and hands of the patients be washed with water at the proper temperature, both on their admission and departure, unless the chief medical officer shall order differently.

Admission outfit.

Hands and feet washed.

Before discharging a patient the *infirmier major* will see that the bed and other effects have not been wilfully damaged by him. In the case of such damage being detected it must be immediately reported to the *officier d'administration* on duty, who will cause the patient to pay for it, or have him put under stoppages. Convalescents, before leaving the ward for their walk or other cause, shall be directed to spread properly the blankets, tucking the edges in, and when unable to do so the *infirmier* must do it for them.

Damages to be made good.

Beds in order.

Patients will not be allowed to lie or sit many on one bed, nor to lie down with their slippers on.

To prevent infection or deterioration, in grave cases the linen should be frequently changed, and occasionally cloths (*alèzes*), oat-straw, cushions, or other similar contrivances, should be employed under the direction of the sanitary officer.

Linen changed.

Leeches. It is particularly in the application of leeches that the comfort of the patient and the preservation of the furniture shall be provided for.

(*Alèzes*) or cloths. The best way is that of forming the cloths (*alèzes*) by folding a sheet in eight layers. One portion is then put under that part of the body where the leeches are to be applied, and as the blood penetrates it it is pulled and rolled up, till in its turn the next portion is soaked with blood, taking care that it does not go quite through to the bed sheets.

Bleeding. Analogous precautions, though practically easier, must be taken for bleeding, putting a cloth under, and holding properly the bleeding cup.

Washing of blood-stained linen. All linen stained with blood must be taken immediately to the wash-house and put at once into water. An equal quantity of clean linen will be then delivered to the *infirmier*. These cloths (*alèzes*) should be made with old sheets, and an abundant supply always ready.

Presses and coffers for linen. The *infirmiers majors* being answerable for the furniture and the linen, must have a sufficient number of locked-up presses or coffers, where the linen may be kept in the most regular order, so as to show at a glance the quantity contained in each.

List of contents on doors or lids. A list of all the contents is to be stuck on the door of the presses or lids of the coffers. One press or coffer with an assortment of the linen that may be required shall be consigned every day to an *infirmier* in charge, who will be answerable to the *infirmier major*.

One coffer or press for daily use. Deliveries should be made with the greatest regularity as to quantity and time.

Regular delivery.

Woollen cloths beaten. All the woollen cloths should be beaten regularly in the open air, taking the blankets from the beds in rows, leaving others in exchange during the beating of those in use.

This operation should take place during the space of time between two distributions.

Chapter 5th.

Superintendence of the Wards, Internal Service, Police, Cleaning.

Morning inspection. At daybreak the *infirmier major* will begin his inspection and see that during the night all the orders have been executed, the rules duly observed, whether any new patient has been admitted, if all has gone on regularly, and whether any extraordinary event has occurred.

Daily report. He will then superintend the cleaning and ventilating of the wards and retreats, causing the pots and spittoons to be emptied excepting those that the medical officer may want to see, and all the empty vials to be removed, the beds to be readjusted ; and, having questioned the various *infirmiers* upon all that the medical officer may require to know about the patients at the time of the visit, he will proceed to make his daily report for the last 24 hours, of all that has taken place in his division, mentioning always the questions or observations made by the medical officers, and the names of all the *infirmiers* under his orders, and those that were on duty.

Grave cases. Special *infirmier*. The grave cases must be the subject of his particular attention, and when constant attendance may be required a special *infirmier* must be obtained from the administration, if the staff under his command cannot supply one.

Exactitude in following orders or prescriptions. Orders and prescriptions must be executed in the manner and at the time indicated, and no excuse can be accepted for doing the contrary.

Remedies internal or external, bandages. Although the *infirmiers* have nothing to do with the preparation or delivery of the prescriptions they are obliged to ascertain that both internal and external remedies are administered with exactitude, and that all the bandages are in perfect order, and give notice to the surgeon on guard if the bandages require replacing or the bleeding of the leeches continues after three hours from the time when they were applied, accustoming the *infirmiers* to wash the bites with tepid water, with all due care, not to tire the patient or expose him to the cold air.

Baths. The time and temperature of general or partial baths should receive particular attention, and care should be taken that patients going to bath-rooms or coming from them may not be exposed to the influence of cold air, and that the necessary supply of dry and warm linen be always ready for their use in the bathing rooms.

No less care is required for patients who are to be carried to the bath.

Patients in perspiration shall be attended and changed with the most delicate precautions ; they must receive their linen warm, and be protected from all currents of air. The operation of changing them must be done with the greatest speed, and if the whole bed is to be changed the patient must be placed on another or on a camp bed close to his own, and the bed must be warmed before he is put into it.

Newly admitted patients. The same precautions are necessary in cold weather also for newly admitted patients in state of grave malady, in addition to the washing of their hands and feet, &c. if approved by the medical officers, under whose direction it should be done.

Fuel. The distribution and the use of fuel calls also for the attention of the *infirmier major*, both with a view to cleanliness and economy.

Punctuality. *Infirmiers majors* are to set a good example to their subordinates by being always in good time at their post, and they will then proceed directly to inspect whether all was done punctually during their absence ; will survey all the work to be done, and inspect all the beds and patients' outfit, &c., and ascertain that all are clean and in good wearing state, and should any repairs be wanting they will have such objects requiring it changed and repaired immediately, or at latest the next morning.

Shelves by the beds. The shelves by the beds should be examined to see that all vases used are perfectly clean in and out, that no disagreeable impression or cause of repugnance may be produced by them on the patients.

Washing up of vessels. It is the duty of the *infirmiers majors* to watch attentively that the washing up of the vessels used for the aliments be made at a different time and with tubs and cloths different from those used for the washing of the pots serving for dejections.

Wards cleaning. Special importance deserves to be attached to the following means of preserving clean the walls and floors of the wards.

Walls and floors. The walls must be kept always well white-washed and dusted, the floors swept continually, and washed immediately where any spot or greasy substance, or other filth leaving a stain, may have fallen.

Patients should not spit on the floors. Patients will be persuaded not to spit or throw any dirt on the floors. The *infirmiers* shall be directed not to fill their pails or wine cans too much, so that they may not spill their contents.

Pails not to be filled up too much. This is a very important rule, for besides preventing the materials from being lost, it avoids the danger arising to the *infirmiers* themselves and the patients of falling in consequence of the slippery state in which the floors and steps would be were any greasy substances spilt upon them.

Dampness to be avoided. If the floor or any part of it should require washing it should be done with a broom wrapped in a wet cloth, and be scrubbed and dried, to avoid producing dampness, which is very detrimental to the health of the invalids.

Patients to co-operate in keeping all clean. With all that kindness and benevolence which should characterize a well-trained *hospitalier*, the patients should be induced to co-operate in keeping clean the retreats and all that they have the use of.

Infirmiers to supply for disabled patients. It is, of course, the duty of the *infirmiers* to clean all that belongs to an invalid who is unable to act for himself, and cannot use his own limbs.

Refractory patients to be reported. If any of the patients should be wilfully negligent in what he is directed to do with regard to neatness or decency, after he has been repeatedly admonished, he will be reported to the medical officer and to the *officier d'administration*, who will dispose of the case in accordance with the regulations of the service.

They must be dressed always decently and shaved The invalids should never be allowed to leave their bed unless decently dressed, with trousers and gown, socks and slippers, the whole in good wearing order

and condition. They must be regularly and frequently shaved. Each patient must keep his ward ticket on the shelf by his bed, and the bed numbers are to be kept always visible and in good order.

On the demise of a patient the *infirmier major* shall request the surgeon on guard to attend immediately, to identify the man and mark the hour of his death on his ticket, &c.; then call the serjeant on guard to take the inventory of what the deceased had in his bed.

The body shall be removed with all possible decency, and if necessary to do so during the night the arrangements should be conducted as quietly as possible, in order to avoid disturbing the repose of the patients.

The ticket of the deceased and all his papers shall be then deposited at the office of admission, signed by the *infirmier major* and the serjeant on guard.

The bed and all the furniture must be removed and a new one put in with the least delay.

It is to be impressed upon the patients that under no circumstances can gambling, singing, or noise of any kind that may interfere with the quietude necessary to a hospital, be allowed. Should persuasive means fail with any of the patients he or they shall be immediately reported to the *officier d'administration* and to the medical officer at the next visit, who will take the measures he may deem necessary. Patients possessing money or articles of value shall be required to deposit them according to the established rules; should they refuse to give them up they will be reported to the *officier d'administration*, who will direct the *infirmiers* to see that the patients do not dispose of them.

In case of grave malady it will be still more important to report to the *officier d'administration* that patients have property about them.

On the discharge of each patient, the *infirmier major* will see that every object belonging to him, that he deposited on his entrance into the hospital, is returned to him, and that he restores all the articles that were lent for his use during his malady; and if these articles are not forthcoming, or are damaged, the fact will be reported to the *officier d'administration*.

At the hour of discharge of patients they will be assembled together, cleanly dressed, and in order, according to their division, and will be led by the *infirmiers majors* to the meeting place, where they will be consigned to the *officiers*, who will take them back to their corps.

Chapter 6th.

External Service.

Courtyards, and particularly the gutters and their angles, are under the survey of the *infirmiers majors*, who must cause water to be thrown upon them in hot weather, all dirt and weeds to be removed, and all palings, windows, skylights, gratings, and ventilators to be kept always clean.

Patients should not be allowed to lie down on the grass, or on the pavement, or to gamble, or remain there at the time of the visit, dressing, or distributions, or to walk or sit there in damp or bad weather, or incompletely attired.

Chapter 7th.

Distributions to the Infirmiers.

The distributions of aliments to the *infirmiers* are to be done as soon as the service allows it.

The first to the *infirmiers* who are on duty, those who live in the hospital, or are under restrictions.

The second to those who are permitted take their portions out of the hospital.

The first must be made as soon as the cleaning of the ward is so far advanced as to allow those who wait for the second distribution to complete it.

The superintendence of this distribution is the duty of the *infirmier major* on duty, who, being furnished by his colleagues with a list of the men in service in each division, shall make out a general list, marking the *infirmiers* living on the premises, and those who are under restrictions, and shall hand it over every morning to the *infirmier* in charge of the provisions, who is to transmit it to the cook.

side and to receive a general list of all *Infirmiers* for the different distributions.

The *infirmier major* gives the signal for this distribution with three strokes of a bell, when the men, decently dressed, will descend to the kitchen in two ranks, the men under restriction last.

Infirmier Major to give signal for distribution, three bell strokes.

They will then proceed,

1st. To the pantry for bread and wine, or beer;

2nd. To the kitchen, for soup and meat;

3rd. To the hall, sitting down each in his rank.

The *infirmier major*, always present, will see that order is preserved, and the meal is not protracted longer than half an hour. As soon as the meal is over, each patient must wash his own vessels, and put them in their places. The tables will be cleaned and the hall swept by two of the men under restriction, or, in defect, by two *infirmiers* in turn.

The *Infirmiers* must wash their vessels, &c.

Tables and hall cleaned by two *Infirmiers* or men under restriction.

A list of all the vessels, linen, and other utensils used in the hall, shall be fixed in a conspicuous part of it, to be readily verified by the *infirmier major*.

A list of all that is used in the hall to be hung on the wall.

The cleaning being completed, the *infirmier major* will give the signal for the second distribution with six strokes of a bell. Those who are allowed to take their meal out of the hospital, and who were employed in finishing the cleaning of the wards, will descend in their uniforms, with their boxes, in two ranks, to the kitchen to receive their provisions as the others.

Second distribution signal, six bell strokes.

The *infirmier major* will escort them as far as the porter's lodge, when they will be inspected and marked down, and allowed to go out, as well as all the others of the first distribution that are not on duty nor under restriction.

Infirmier Major will escort to the porter's lodge those *Infirmiers* that are allowed to go out.

At the second distribution, that for the *infirmiers majors*, and the other *infirmiers* attached to other services, such as the dispensary, the baths, &c., will take place. They will be allowed to go out with the preceding ones.

Infirmiers Majors receive their aliments at the second distribution, and also other *infirmiers* attached to different services.

If the hospital is at some distance from the town, an *infirmier major* going to the town after the distribution will lead the *infirmiers* as far as he goes. If no *infirmier major* is going he will confide them to a head *infirmier* of a ward.

Infirmier Major or senior *Infirmier* to lead the *Infirmiers* out of the Hospital.

The *infirmiers majors* are responsible for the neatness of the dress of the *infirmiers*, and those who are found in default on this point at the time of the distribution will be put under restriction and obliged to eat in the hall.

Infirmiers to be clean at the distribution.

These directions are intended to secure the health of the *infirmiers*, and prevent the introduction of their aliments into the wards, and the *infirmiers majors* must be very strict on these points.

No aliments of the *Infirmiers* to be taken into the wards.

After each meal the hall must be thoroughly cleaned, and the windows opened, but secured from the wind, and closed in case of rain or stormy weather.

Hall cleaned, windows open, &c.

Chapter 8th.

Watchfulness upon the Infirmiers, their Instructions and Works.

The *infirmiers majors* shall watch incessantly their *infirmiers* to know them thoroughly. An *infirmier major* that knows well the disposition and abilities of his *infirmiers*, can lead them well, cure their bad habits, account for their respective services to the authorities at every moment, and obtain the esteem and approbation of his superiors, while acting differently he would expose himself to become a victim to his weakness and carelessness.

Infirmiers Majors must know thoroughly their men.

When great cleaning operations are done, care must be taken that the service may not suffer in consequence, that the grave cases may not be neglected, and a sufficient number of *infirmiers* left to attend properly those patients whose cases are urgent. *Infirmiers majors* must take great pains to instruct the new *infirmiers* in their duties, and particularly in

Attendance to patients not interrupted during cleaning operations.

Instructing

men in carefully making the beds, &c.

making the beds so as to be even, easy, and clean, in being careful that the seam of the upper sheet be on the side of the blanket, also that of the under one to be on the side of the mattress, in order not to hurt the patient ; also that the head end of the sheet be never put to the foot of the bed, as well as that the middle blankets are not put on the top of the others.

To keep retreats clean and dry.

The retreats must be frequently cleaned and washed, but dried immediately, and sawdust always spread on the floor, and a mat laid at the door.

Lobbies and staircases to be kept clean and dry.

The cleaning of the lobbies and staircases shall be performed with the same precautions as were prescribed for the cleaning of the wards ; and to render the washing less frequently necessary, old straw from the mattresses shall be strewn on the floors of the lobbies and the steps of the staircases whenever the weather is damp, taking care that the straw is renewed whenever it becomes too wet, or is removed when no longer required. Only the ground floor lobbies having sufficient drains and ventilation shall be washed with abundance of water. The *infirmier major* is responsible for the appearance and dress of the *infirmiers*. They are to see that their clothes and linen are always clean, in good repair, without stains or holes, that their shoes are always well blacked, and their stockings clean.

Ground floor lobbies can be washed with water in abundance.

Infirmiers to be properly dressed.

Infirmiers' hair to be cut, and beard shaved, hands frequently washed.

Their hair is to be regularly cut short like soldiers of the line, and their beards shaved, their faces and hands frequently washed, both for their own health's sake and that of the patients. They are to wear a uniform cap, and aprons always clean.

Infirmiers' dresses.

The cap is to be worn straight and never on one side.

Infirmiers' to have good manners.

They must be attentive and polite to all, respectful to all the officers both medical or of the administration, or of other corps.

Infirmiers' salute to officers.

They will salute any officer they meet, and preserve that position as long as the officers are talking to them.

Attention and kindness to patients.

Their politeness and compliance must be particularly shown to the patients, to whom, should the patients require their presence, they should proceed at once, or if otherwise pressingly engaged, either send another *infirmier* to them, or make them understand with kindness that they will attend to them as soon as they can.

Regularity in *Infirmiers*, movements when acting collectively.

Whenever several are united, they shall be ranged and put in a line, and all their movements from one place to another shall be executed by command and in step.

They must all remember that they are military men.

The more the *infirmiers majors* impress on the minds of their *infirmiers* and of the invalids that they are soldiers, and in all enforce military rule, the more they will be respected by the patients, and will consequently fulfil their service more easily.

Substitutes.

Substitute *infirmiers* by conforming willingly to the rules established will acquire a right to the regard of their elders in that service, and thus the best harmony will be maintained and they will gladly help each other.

When the time and service permit it, the *infirmier major* shall drill his men as soldiers.

Infirmiers to be drilled as soldiers, firemen, and ambulance corps.

They must be drilled also as firemen, and particularly in the service of the ambulance carts and cases. They will be caused to open them, unload and reload them, and shut them up again, with the quickness required on the field of battle.

Infirmiers must be trained in everything essential to the service in case of finding themselves isolated.

They must practise the putting up or down of the couches, the undoing, beating, and making up again the mattresses ; they must know how to arrange a kettle for making broth (soup), how to warm and administer baths, how to prepare a potash solution for cleansing, how to direct the fire under the coppers or in the stoves, whatever may be the fuel employed.

It is essentially important that they should be well practised in handling the stretchers skilfully, so that the invalids or wounded may feel the least amount of inconvenience on being carried, and without the risk of being upset.

Broken step *pas brisé* preferable to the regular.

Infirmiers will be reminded that the preference given now to the broken over the regular step, in conveying the wounded on the stretchers, is due to the observations of a man belonging to their service.

They should also ever be alive to the idea that neither fatigue nor disgust should ever affect those who are devoted to relieving the sufferings of their fellow beings.

Gymnastics recommended.

Gymnastics will be found very agreeable and useful means to render *infirmiers* dexterous, swift, and agile.

Inspection of quarters.

The *infirmiers majors* ought carefully to inspect the quarters of the *infirmiers*. If any of them does not habitually sleep there, the *infirmier major* on duty should spend there the portion of the night in which he is not engaged in his tours of inspection.

Infirmiers to get up at 4 in summer, at 5 in winter. Cleaning of quarters.

He must cause his *infirmiers* to get up at 4 o'clock in the morning in summer, and at 5 in the winter, and to open immediately all the windows and empty all the slops and make up the beds.

Infirmiers taken ill to be placed in a ward for medical inspection.

If he finds any of the *infirmiers* unwell he will have him placed in one of the wards to be examined at the morning visit, and will report him to the officer of the administration on guard.

Personal cleanliness.

They will proceed at once to beat their woollen cloths in the courtyards or lobbies, to black their shoes, and then wash their faces and hands.

They will change their shirts every other day in summer and twice a week in winter, and will take a bath in the river at least once in five days by turn when not on guard in summer, and indoors once a fortnight in winter. The personal washing having been done half an hour before sunrise, the rooms shall be swept and all filth removed to the depôt.

Clean water in quarters.

A large bucket of clean water will be kept constantly in the room, and the *infirmier major* will see every evening that the water has been renewed for the night.

Infirmiers at their post at 5 in summer, at 6 in winter.

The *infirmiers* must be at their respective wards at 5 in the morning in summer and at 6 o'clock in winter.

Once a week at least they must polish their arms and shako metals with a soft brush, not to wear them out too fast.

Name and No. on the beds.

The name and number of each will be inscribed at the head of their beds, and on the box where his dishes, plates, and bread are kept.

Kit and knapsacks always ready.

The knapsack must be full and ready with all the clothing excepting only what is in daily use. The pocket on the top of the knapsack shall contain all the small necessaries and the dirty linen, which shall never remain longer than five days unwashed.

The coats shall be carefully folded in two, and the great coat in three, with the lining outside, and the shako on the top wrapped in its cover, all on the shelf.

The shoes shall be hung, polished, to nails.

The blankets and mattresses shall be beaten every fortnight, and the glass windows cleaned every month.

The *infirmier major* will make a complete review of all the outfits and necessaries every Saturday after the first distribution, and then will take place the further works of personal cleaning, such as washing, &c.

Officiers d'Administration review.

The *Officier d'administration* will make his review on each Sunday between two distributions before they may leave the hospital.

Salute to *Officiers d'Administration*, or superior officers.

When *officiers d'administration* or any other officers in uniform visit a room each *infirmier* will stand up cap in hand, or saluting if with shako on his head.

If it is a superior officer each must stand at the foot of their beds.

Lights.

Lights will be lit at five in the morning when required, and at dusk in the evening ; they shall be all put out at half-past nine in the evening, excepting one that will burn all night with a middle-size wick.

Silence and bed hour, 9½.

At half-past nine all shall be in bed, and silence be kept in the room.

Sleeping cloth cap.

No one will be allowed to sleep in his forage cap ; they will all be furnished with 2 cloth night caps (*serre tête*).

Three suits.

The *infirmiers* will have 3 kinds of dress.

1st. Fatigue suit, with jacket, apron, forage cap, replaced when at hard work by the cloth cap.

2d. Suit for going out, with great coat, forage cap, or shako, according to the hour.

3d. Full dress with coat and shako.

Chapter 9th.

Infirmier Major on Duty.

The *infirmier major* on duty has the charge of all the hospital during the night, when his comrades are absent. He must not undress during this service.

He shall make two tours of inspection at uncertain hours, or more if necessary, to see that the *infirmiers* are not asleep, and are relieved at midnight.

He has to make three reports in 24 hours and must be ready to account for any important event that may happen, and report on it either to the medical officer or the *officier d'administration*, according to the nature of the case.

He must superintend the lights and fires, if any are kept in the night.

He must obtain from his comrades a list of the patients requiring particular care during the night, see that they receive it, and report next morning to his comrades anything important that may have happened in each division during their absence.

If in a ward linen is wanting, he may borrow it from another, taking care to inform his comrade of the circumstance on his return.

He shall visit the baths and satisfy himself of their perfect regularity.

He must make out a list of all the men on duty, and hang it in his office or guard room.

The *infirmier major* has the command of all the fatigue party works, at which he must assist personally, and he has to superintend the cleaning of the courtyards and all the external parts of the hospital.

He must attentively watch, and more particularly in the night when his comrades are absent, that no abuses take place, such as dice or any other gambling, introduction or subtraction of aliments or any other object, or indulging in sleep or idleness on the part of those who should watch actively.

His attention must be awakened at the slightest gust of wind, and if he sees any probability of storm coming on, he will direct all the doors and windows to be secured to prevent noise and damage.

The *infirmier major* on guard has to inspect the men going out, and see that they are clean, and have no aprons on ; he has, also, to watch at their meals, with regard to the quantity and quality of the aliments, as well as report upon them, if cause of complaint is given.

To prevent delays, he will furnish the *officiers d'administration* with a list of the men on duty, or any others who ought to take their meals in the hospital, so that the cook may know in time the number of men he has to feed.

And he must especially observe, in his tours of inspection during the night, anything that might produce or give warning of a conflagration.

Instructions for the Cook.

Chapter 1st.

General Duties.

The importance of the services of the chief cook in a military hospital is self evident. His responsibility is very great, and no common intelligence and activity are required for a person to be qualified for such a post.

He is bound to see that the quality of the aliments he prepares is good, that they are prepared with the utmost care and cleanliness, and served in the most agreeable manner. He must spare nothing that is necessary, but at the same time observe the strictest economy in all that he uses, exerting himself with vigilance, setting an example of zeal and activity to his subordinates, and maintaining the greatest regularity and efficiency in his establishment, detecting and correcting forthwith the slightest deviation from the established rules. — and vigilance.

Exactitude in the time of the distributions is all important, and nothing could justify departure therefrom ; he must show the greatest firmness towards his assistants, and allow nothing to enter or go out of his kitchen without his knowledge. He will conciliate his subalterns by kindness, in order to gain their esteem and promote the welfare of the service, instructing them in the duties of his department, that in case of accident or his own absence, the service may not suffer. — Exact time to be kept. No toleration for abuses, but kindness to subalterns.

Cleanliness both of the place and the person is absolutely necessary, and strict orders for the exclusion of all strangers ought to be given, as well as perfect silence imposed, excepting for the communication necessary for the service. — Cleanliness; strangers not to be admitted. Silence.

Chapter 2d.

Broth and Meat.

Broth is the principal object of an hospital kitchen, and the cook must know the best kinds of meat to produce excellent broth, which he will request the *officier d'administration* to furnish him with, and to him he shall make his observations when necessary. — Broth and meat.

He must be acquainted with the capabilities of his cooking apparatus, &c., how long they require to boil the provisions, and the quantity of fuel necessary. — The fireplace, and boilers.

The saucepans, &c., must be carefully wiped dry before using them, to remove all dust, dirt, &c. Each piece of meat shall be separately examined, to see that it is sound and pure before it is put into the boiler. — Meat all choice.

Neither heads nor plucks, nor feet nor legs, should ever be introduced into it.

After the meat is put in the boiler he will see that nothing is present in the water that affects its purity, then two-thirds of the salt presumed to be necessary will be added.

The boiler then shall be locked and the key handed to the non-commissioned officer on guard, who will be there ready to open it at scumming time. This operation he will do with all the required accuracy. — Boilers locked till scumming time.

His assistants must regulate the fire under the boilers and keep the contents gently boiling, which is essential to produce a good broth. — Assistants instructed.

For beef broth the boiling must be kept up for six hours, therefore the fires must be lighted at one or two o'clock and at eight in the morning. — Beef broth.

Veal and mutton will be added at a later hour, to be all cooked at the same time with beef ; the meat will be taken out at eight for the morning distribution, and two o'clock for the evening distribution. When the meat is taken out, the vegetables are introduced, which by being boiled slowly will be ready by the time of the distribution. — Veal and Mutton. Vegetables.

The meat is placed into dishes to strain and become firm before carving it. It should be cut into slices rather than thick pieces, all of nearly the same size and weight. — Straining meat.

The meat shall then be weighed, and placed into parting basins and carved, and just before the distribution be warmed by pouring boiling broth upon it, which shall be afterwards drawn through a tap at the bottom. — Weighing Meat. Warming meat in basins with boiling broth poured upon it.

Each parting basin will contain the quantity that is allotted to one or more wards, which must be distinguished by a proper indication.

When the meat is ready, the vegetables being ready also, the fire under the boilers shall be extinguished before the distribution of the broth. — Fire removed.

Before beginning this, the salt that is still necessary shall be added, keeping it always undersalted, which is better for invalids. — Salting.

No distribution before that to the patients.

Under no pretext shall the cook think himself authorized to distribute broth to any one before the patients have had theirs.

Tasting.

Tasting excepted.

Distribution.

At the time of the distribution, all the *infirmiers* being present to receive the broth in their pails, he calls out from the list he has received the ward and number of invalids that are to receive meat broth ; and measures properly the broth into the pails.

Scaling one number and ward.

He will at each successive distribution skip over one number, so that ward and number that was first in the morning will be the last in the evening, and so on, each in their turn.

Bottoms not to be stirred up.

In pouring the broth from the large into the small recipients it is to be done with precaution, so as not to stir up the remains at the bottom.

Recipients to be kept closed.

Experience has demonstrated that the broth at the top contains more of the aroma than that which is lower in the recipient, and that has shown the necessity of preventing its evaporation by keeping the recipients well closed as much as possible.

Distribution of vegetables.

In order to divide the vegetables equally among all the wards, the chief cook will have them all placed in a basin before the broth is distributed, and after the distribution into the pails a proportionate quantity of vegetables will be added to each.

Special diet and newly admitted.

After the distribution for the invalids the cook will put by a portion of it for those under special diet, and for those admitted after the distribution. The *officier d'administration* will tell him what quantity, and will have it put by in a cool place.

Broth through a colander.

Before distributing the broth to the *infirmiers* it will be passed from the large boiler into the basin through a colander.

Recipients washed.

The chief cook will then cause all the boilers, &c. to be washed clean, in order to remove any substance that the heat of the fire may have caused to adhere to the sides of them.

Chapter 3d.

Light Aliments.

Care in preparing light aliments.

The same care will be bestowed on the preparation of lighter food as on that of meat and broth.

Vegetables well picked. Vegetables to be perfect in quality.

Fresh vegetables must be carefully selected ; only the soundest used, others, such as young potatoes, woody carrots, &c. must be rejected, and the *officier d'administration* informed of it.

Dry vegetables to be picked.

Dry vegetables must be also well picked, spreading them upon a board and examining and cleaning them carefully.

Rice.

Rice must also be well cleaned, and be neither dusty nor broken, nor the grains in their husks.

Rice steamed and boiled.

Rice should be steamed first, and then boiled for a short time in milk or broth.

Quality of water to boil vegetables.

Dry vegetables require special attention with regard to the water in which they are boiled, which must not be hard ; and they should be steeped previously in water.

Milk of the best quality, boiling of it.

The quality of the milk supplied must be the best and purest. As soon as it is brought in it must be boiled, as a means both of preservation and of ascertaining whether it is fresh or not. If it coagulates on the fire, notice must be given immediately to the purveying officer on guard.

Dry fruit to be steeped in water.

Dry fruit, such as plums, &c., will be first properly examined and picked, then soaked in pure water for about six hours. If they make a sediment they are to be boiled in fresh water ; or after stirring them a little to bring to the surface any light floating body that they might have contained, the superfluous water is removed and they are boiled in the remaining water.

Eggs.

Every egg must be well examined before using it, to prevent spoiling what they are mixed with.

Inferior articles rejected.

Anything that is found inferior in quality or deteriorated must immediately be reported to the purveyor to have it replaced without delay.

General remarks on the cook's duties.

Without entering into all the details of the art of cooking, or the rules of economy, neatness, and salubrity, which would be too long to do here, it must be supposed that the person selected to so important an office is well informed of his duties and has sufficient intelligence to meet the responsibility of his place.

Simplicity, purity, and salubrity in hospital food.

We shall content ourselves with remarking that he must remember that in such a place it is not for the refined or rather spoiled taste of the gourmands that he has to work, endeavouring to awake their appetite by high seasoning and spices, but he has on the contrary to render his preparations attractive by their purity, simplicity, and salubrity.

Spices and seasoning to be abstained from.

He therefore shall scarcely use any spices or other seasonings except for the officers, and then also very moderately.

Salting soup.

He will entrust to no one the care of salting the soup for the patients unless he can depend thoroughly on the person that he employs, and before distributing the food he will ask the purveyor to taste the aliments. For that purpose he will keep expressly a china small basin and plate and a clean spoon and napkin always ready.

Purveyor to taste broth.

Cook's conduct

Finally, the cook should recommend himself to his inferiors by his affability, not losing sight of the strict regularity that the service demands, and to his superiors by his politeness, subordination, exactitude, honesty, and frankness.

Chapter 4th.

Boiling of Bones.

Boiling of bones and its use.

The cook will be provided with a compact saucepan in which to boil the bones that are left over from the meat already used.

He will collect grease as it floats, and use it instead of butter for seasoning the vegetables served to the *infirmiers*.

The liquid, as it becomes thick enough, will be used to colour the different parts in the premises that from continual friction may frequently require it.

Chapter 5th.

Directions for the Use of Fuel.

Fire-place, dampers, economy of fuel.

The cook will of course know how to regulate his fires in fair proportion as they are required. He must therefore be well acquainted with his fire-places, grates, dampers, &c., and the different effects produced by the use of various kinds of fuel, such as coals, charcoal, or wood, with a due regard to economy, extinguishing or diminishing the fires as circumstances shall require ; ashes he will preserve for cleansing, &c. He must instruct his assistants in all these particulars, that they may be able to co-operate with him or act in case of his absence.

Wood ashes.

Assistants' co-operation.

Chapter 6th.

Distribution to the Infirmiers.

Distributions to infirmiers.

The distribution to the *infirmiers* must be made with as much regularity as those to the invalids. No partial distribution can be allowed. There will be only two in the morning and two in the evening ; the first for the *infirmiers* eating indoors, the second for those allowed to go out with their meals.

Meat cutting.

The cook will take care in cutting the meat for the patients to avoid making many shreds and fragments. When he cannot prevent this he will endeavour to use them up in preparing some niee stewed dish with vegetables for the *infirmiers*.

Meat stewed.

Meat preserved in a safe.

Any meat that is left he will preserve in a safe for the next day, always informing the *officier d'administration* thereof.

Variety recommended in the food for the *infirmiers*.

The *infirmiers* that eat their meals in the hospital shall receive their food well seasoned and varied with different vegetables to entice and preserve their appetite and health, while those that consume their provisions out of doors may receive simply their broth and plain meat, as they have the means of adding some seasoning at their will.

Lists of the *infir-*

The cook shall keep a list of each of the two categories separately, and at the call of their names

from these lists at the time of the distribution, and when ranged in their ranks, their portions will be given to them.

Everything that is given to the *infirmiers* eating in the hall must be nicely served, and hot.

On the other hand, they must present themselves neatly dressed, hands and face washed, and all their vessels perfectly clean, which the cook shall ascertain before putting in any of the aliments. These must also be all in good preservation and all uniform in shape and size, that no abuses may take place, not even for *infirmiers majors*, who may have some distinction in choice, but never in quantity.

Chapter 7th.

Utensils,—Cleansing and Preservation.

Cleanliness in an hospital kitchen is one of the most important points, and the cook by giving his attention to it fulfils his duty, and gains for himself the praise of his superiors and all the visitors.

All the objects in painted wood must be daily washed, and those that are not painted scrubbed with fine sand, or brush and soap, to remove all greasy spots.

All the copper vessels also must be regularly scoured, and dried well outside, and washed with hot water inside, not forgetting the lids. These should be always well tinned inside; and whenever tinning is required no time should be lost in informing the *officier d'administration*, who will see that it is done.

All other vessels also will be kept perfectly clean outside and inside as soon as they cease to be in use; and all must be wiped dry as soon as they have been washed, to prevent them from rusting.

The safe also requires to be kept always very clean, and all that is put into it should be cold and arranged in order: Nothing shall be put there in copper saucepans.

The scullery requires the constant attention of the cook. He will see that nothing remains there, that the objects are immediately washed, wiped dry, and replaced; that no dirty water is kept, but is thrown away and replaced by clean. The floor and walls of it should be painted with oil colour to bear continual washing, in order to remove all greasy substances, &c.

The character, the conduct, the aptitude, and appearance of his assistants deserve also his special observation. They must be subordinate and polite, behave honestly, and act with regularity and activity, neither too slowly nor too hurriedly; they must do all readily and with precision, and observe cleanliness. Their clothes must be clean and changed according to the different work they have to do. Their hair cut short, and their hands and faces frequently washed. His own example is of great importance on this point.

The cook must look over his establishment very frequently, and particularly in the evening before leaving the kitchen, to assure himself that there is no danger of fire.

Instructions for the Porter.

General Duties.

An *infirmier major* charged with the duties of porter should be alive to the importance and responsibility of his place; he should take the greatest care so to act as to deserve the confidence placed in him.

On his conduct the internal regularity of the service chiefly depends, and the prevention of abuses of all kinds.

He being always prominent in view should be a model of neatness, both in his person and his lodge. He must be always watchful, and nothing entering or going out should escape his notice; he must join firmness with good manners, politeness, and dignity in his conduct; and if any one should attempt to take advantage of his kindness, and conciliatory remonstrances should not avail, without losing temper he may call the guard to his aid to enforce obedience to his orders.

May call the guard in aid to make himself obeyed.

He will observe also that the sentry on guard obeys the orders of his post.

He is to watch also on the sentry.

Opening and closing of the Gates.

The hospital gates will be open at 5½ every morning from the 1st October till the 31st of March, and at 4½ from the 1st April till the 30th September.

Time for opening gates, 4½ in summer, 5½ in winter.

They shall be closed at 10 o'clock precisely every day all the year round, and shall be opened only for the admission of the sick or wounded and for the medical officers on duty.

Gates closing time, 10 o'clock.

No one shall go in or out without the porter's consent, watching the people that enter.

No admission without porter's consent.

The porter will allow no one to introduce any food or drink unless for the service of the hospital, or for the medical or commissariat officers in active service.

No food or drink admitted except for officers on duty.

He has the right to question and even to search the people that enter, and if he can detect anything concealed he has a right to stop it, reporting it immediately to the commissariat officer or the officer on guard.

Porter can question and search people, and if he detects things concealed can stop them.

He will proceed in all this with respect to conveniences and the best possible manners.

Must proceed always with good manners.

People may deposit things that they bring with them in his lodge, and the porter will restore them to the owners on their going out.

Objects declared must be deposited, and then returned to their owners when they go out.

By frequently searching the men on guard, he will make sure that they do not smuggle in anything forbidden; and they will be deterred from doing so when they know that if they are detected in attempting to commit such an offence they will be reported to the officers on duty and severely punished.

He will search frequently the men of the piquet to deter them from trying to smuggle in anything, and when found in fault report them.

No one will be allowed to enter without a ticket of admission, except those going to the medical or commissariat officers; he will see that persons do not make this a pretext to introduce themselves into the hospital; and if he has reason to suspect that they will attempt to do so, he will adopt measures to see the rules obeyed.

Tickets of admission necessary to enter the hospital; people admitted to be watched.

Even those that are provided with a ticket of admission must be closely watched, and if such persons are known to be women of bad character the porter can refuse them admission.

To women of bad character no admission granted.

Bearers of tickets of admission can be admitted from 12 till 3; in the event of persons coming from a distance it must be reported to the director, who will give the necessary orders on the matter. The bearers of tickets who obtain admission shall be noted down; and if at half-past 3 they have not left the hospital the serjeant shall be ordered to request them to quit.

Hours of admission from 12 till 3, all must have left at half-past 3.

Arms, sticks, and dogs must be left at the entrance. No one shall be allowed to stop at the lodge longer than the time requisite for the fulfilment of the above regulations.

Arms, sticks, and dogs to be left at the lodge.

The porter shall keep only one wicket gate open, allowing entrance by the large gate to vehicles or large bodies of men, when he will remain present to see the gates shut after such admissions.

Only one wicket to be kept open, except for vehicles and large bodies of men.

The discharged patients will be examined on leaving; if there should be a large number of them the porter will demand assistance, and they will be examined in small detachments. Men with bandages on will not be allowed to take them out unless they have a medical certificate, testifying to the necessity of them. No object whatever will be allowed to pass without a certificate or pass signed by the director or a first-class adjutant.

Bandages not to be permitted to be taken out unless with a certificate of a medical officer.

No object allowed to go out without a special pass from the director or first-class adjutant.

Infirmiers entering or going out.

Every morning he will receive from the *infirmier major* on guard a list of the *infirmiers* on guard or under restriction. Those not on guard will be allowed to go out after the distribution of their provisions, accompanied by an *infirmier major* or with a written leave. Without either of these they will not be allowed to go even to the yards at any time of the day. Those who go out at 12 must return at 2,

A list of *infirmiers* on guard or under restriction.

Infirmiers no on guard can go out after the distribution accompanied by an *Infirmier Major*

or with a pass. Not allowed to go out without either of these.

and those who go out in the evening must return at 9 in winter and 9½ in summer. Those who have leave to sleep out must return before 6 in winter and before 5 in summer.

Reports.

Report on absence of *infirmiers*. General report at 5¼ or at 6¼.

The *infirmier major* in the charge of the gate will render an exact account of all those who remain absent beyond the prescribed time. He will every day at 5¼ in summer, and at 6¼ in winter, deliver a full report of everything extraordinary that has taken place under his notice since the preceding report to the director or the commissariat officer, or the officer on guard. He will note in it the names of those *infirmiers* who have returned late to hospital.

Board, with list of *infirmiers*, and three columns differently coloured, with holes and pegs to mark their return.

To facilitate this the *infirmier major* shall keep a board with the names of all the *infirmiers* on it, with three columns differently coloured, and a hole in each against each name, for the three different categories, viz., on guard, under restriction, gone out. He will mark on his board all those on guard or under restriction, and those also that are gone out, removing from these their respective pegs as they come in, that at the time prescribed he may at a glance see those that are re-entered in time or not.

Regulations for the Gate.

Patients to be gently recommended not to stop on the entrance.

He will never permit the patients to loiter at the entrance, but will persuade them to retire, avoiding, if possible, calling the guard.

The *infirmier major* must not leave his post unless some one to be trusted is left there.

He will not quit his post under any circumstances, unless for a very short time, leaving some trustworthy member of his family in charge of his lodge ; with a special permission he may absent himself from the hospital, having first procured a serjeant to take his place till his return.

The sale of any articles at the porter's lodge is strictly forbidden.

Instructions for Infirmiers.

Chapter 1st.

Qualifications.

Infirmiers' qualifications.

A good *infirmier* must be sensible, good-natured, obliging, benevolent, and attentive ; must be endowed with an exemplary probity, much prudence, courage, presence of mind, dexterity, docility, self-abnegation, and a conduct above reproach. The want of any of these qualities would render any man unfit for that service.

Chapter 2nd.

General Duties.

Infirmiers' duties.

The duties of the *infirmiers* are of three kinds :—

1st. To the invalids.

2nd. To their chiefs.

3rd. To their comrades and to themselves.

Duties towards the invalids.

The first category consists in obeying punctually all the orders of the medical officers regarding the invalids, giving them every attention, and keeping the greatest cleanliness about them, their beds, the wards, and throughout the hospital.

Nothing, not even bad treatment from the invalids, can release them from these obligations ; they must bear in mind that men infirm in body are somewhat affected in their mind ; and whenever it should proceed from ill-will, they must never forget nor act against their duty, but are bound to report to their chiefs whenever any invalid misbehaves towards themselves or others.

Good manners.

Good and persuasive manners will generally prevent the occurrence of such events, and will, on the contrary, conciliate the patients to obey the *infirmiers* that will so acquire a right to their respect and gratitude.

Duties towards their chiefs.

They owe to their chiefs respect and obedience, which implies also the welfare of the patients.

Duties towards one another.

They owe aid and assistance to each other in order to gain for their corps the respect and the esteem of all by their individual good character, manners, and external appearance.

Chapter 3rd.

Service on Guard.

On guard.

The service on guard consists in attending on the patients of each ward during the absence of the other *infirmiers*.

Guard to last 24 hours. *Infirmiers* on guard do not undress.

The service on guard lasts 24 hours ; during that that time an *infirmier* cannot undress, and he will sleep during that part of the night allotted for his rest, but be always ready to get up when called by his comrade on the watch.

Guard service begins in the morning. *Infirmiers* on guard to be in pairs to alternate their rest and watch.

The service on guard begins in the morning, on the return of the *infirmiers* that were out. It must be divided so that the *infirmiers* being in pairs, one-half may watch till midnight, and the other half from midnight till the time for the morning work. In case of odd numbers the *infirmier major* will provide according to the exigency of the case, but always that the hours of watch and rest be well balanced.

List of grave patients to be made out.

The first duty of an *infirmier* on guard is to take a list of all the patients that require the greatest care, and of the prescriptions made for each by the medical officer.

Duties towards grave patients.

The cares that he owes them are, to see what is their state at every instant, to cause them to take their ptisans, their medicines at the proper times, help them to eat and drink if they are unable to help themselves, keep their beds and their blankets always in order, and assist them with readiness in all they may require.

Perspiration.

Special care must be given by him to the patients when they are in perspiration that they do not take cold. In short he must use all the necessary attentions, answer readily to every call, and even anticipate calls, and provide for their wants before he is requested by the patients, who are not always in a state to express their wants.

Duties towards all the patients.

To hear and see all, the *infirmier* on guard should keep constantly walking up and down between the two rows of beds, and when he sits down he should place himself near the patient that is worst in his ward. He must make no noise either in walking, talking, or in any other way. He will see that the patients have their ptisan, and give them some more if they have finished it ; that what is to be given warm is kept warm ; that no slops are left near the bed, or are well covered that no exhalation may proceed from them ; that the lamps burn well ; that the doors are kept closed and no noise is made in opening or shutting them, and that the patients are kept quiet and make no noise, talking or calling.

Rest time ; consign on changing with his mate.

When his time for rest comes he must wake up and see his comrade at his place, hand him the list of the patients that require particular care, and state to him what has been done and is to be done.

Cases in which the surgeon on guard must be called.

When a patient refuses to follow a prescription, or any other event takes place such as some aggravation of symptoms, the surgeon on guard must be called immediately ; but not to leave the ward alone, the resting *infirmier* must be called up for it, unless the passage of the *infirmier major* offers the means of calling him without waking the resting *infirmier*. If a single *infirmier* is attached to a small room containing patients that have no great need of assistance, he can lay himself down to rest, but he cannot absent himself; if some grave case in it requires constant attention he must ask for an additional *infirmier* to help him in the night.

Cleaning operations an hour before dismounting guard.

An hour before the return of the men in the morning both the *infirmiers* must be up and empty all the slops and clean their portion of ward, without, however, making a noise.

Nervous affections, delirium.

The *infirmier* on guard must watch particularly the patients labouring under nervous affections and delirium, and if necessary fasten them, without, however, hurting them or restraining them more than needful.

Round of inspection. Report.

When an *infirmier major* or any officers go by in their round of inspection, the *infirmier* must go and meet them and give them an account of what is going

on, so showing that he is attentive to his duty ; but if he is engaged with some patient he must not leave his occupation, but wait till the officers come near him to make his report.

Chapter 4th.

Visits.

Before the morning visit at daybreak the work of cleaning must begin, all the slops will be emptied, the beds put in order, the soiled linen changed, the wards swept, the fires lit, hands and faces washed, and all performed that cleanliness and salubrity demand.

Each *infirmier* having done this for the number of beds intrusted to him (his range), he must await there the visit of the chief medical officer, keeping and causing others to keep perfect silence, giving full attention to all, and answering all questions that may be made, and ascertaining that the patients answer correctly. If he remarks something not exact in the statements of the patients, he will politely, without offending their susceptibility, rectify them. If this rectification is likely to give offence to the party, instead of doing it in his presence or in a low tone, which might awake suspicion and destroy confidence, he must do it through the *infirmier major* as soon as he can do it conveniently.

The duties are different for those that come off and those that are going to mount guard.

The former must attend at the visit to give an account of the state of each patient during the time preceding the visit, whether he had an increase or diminution in his symptoms, how he slept, the state of his ejections, expectoration, cough, perspiration, &c. Finally, whether all prescriptions were exactly followed, and any irregularities in food that might have taken place.

Those mounting guard must listen attentively to all the remarks, and prescriptions made for the patients in their range, to see that they are followed with exactitude during the time they are on guard.

Both *infirmiers* will place themselves at the head of the bed of each patient, to give all the details that the medical officer may require, to consider what to prescribe for the patient in the interval till his next visit. If neither the *infirmier* coming off nor the one mounting guard are the range *infirmier*, he must also be present with the two others, disposing themselves in the following manner, viz., the range *infirmier* on the same side with the medical officer, and the two *infirmiers* on guard opposite. The time of the visit is the most important of the day, and the *infirmiers* will pay the greatest attention in stating, with clearness and precision, all that is necessary to state concerning the patients entrusted to their care, as the medical officer must judge of the state of the patient and decide upon the treatment to be adopted, by comparing his own observations with the circumstances related by the *infirmiers*.

Chapter 5th.

Dressing.

Before the dressing, each *infirmier* must have ready all that can be wanted, such as poultices, decoctions, adhesive plaster, lint, cloths* (alèzes), dressing-basket for dirty linen, &c. At the time of dressing each must be at his range, ready to put the cloths under the invalids, and to use them in the way described to preserve the bed furniture and facilitate the movements of the patients, to hand readily to the surgeon the objects he may require, and give him all possible help, to answer his questions, to listen attentively and obey promptly and carefully the orders he may give. They must attentively watch all the movements of the invalids and of the medical officers; to support and assist the former, and anticipate what the latter may want, avoiding to inconvenience them by keeping too close to them, or by being too distant; they will see that no draught of air bears upon the part exposed for the dressing ; they will cover it as soon as dressed, and examine what will be probably required at the next dressing, to have it ready beforehand.

Leeches or bleeding.

The *infirmier* will take the necessary precautions as described in Chapter 4 of the instructions for *infirmiers majors* for the preservation of the bed furniture, &c., in case of application of leeches, or bleeding. The medical officer will tell him how long the bleeding should continue; and in case of the bleeding being protracted beyond the time prescribed, the surgeon on guard shall be informed of it.

The *infirmier* will watch the leeches when on, to take them up and put them away when they fall, counting them over to see that they are all off. Then he will wash well with lukewarm water the part where they had been applied, keeping it always clean.

Chapter 6th.

Distributions.

Distributions of medicines, &c.

Thus are called all the deliveries of medicines or aliments among the patients, *infirmiers*, or the wards, &c. &c.

The principal distribution of the medicines, ptisans, takes place after the morning visit, a supplementary distribution being also made after the evening visit. These distributions are made by the dispensers, assisted by the *infirmiers* attached to the dispensary.

Attention to be made to the right distribution of the medicines.

The *infirmiers* must be very attentive on receiving these remedies to understand well all directions, whether internal or external, the manner and time of administering them, and to ask further explanations in case of doubt.

Distribution of the aliments.

There are two distributions of aliments, viz., one at 10 in the morning, the other at 4 in the afternoon. The rules given at Chapter 3, instructions for *infirmiers majors*, for the preparations and order of these distributions, must be strictly followed. *Infirmiers* cannot be too careful in delivering to each the proper quantity and quality prescribed of the aliments. The bread will be placed gently on the boards, not thrown, the wine and broth or soup well measured and carefully poured out, without spilling them on the board or bed ; the meat on being brought in, in basins or pans, whose lids are left at the entrance of the ward, must be taken up with a fork at the call of the *infirmier major*, and carefully placed on the plate, with a little salt measured and put down at the same time.

For complaints about distributions, and the other details to be gone through after the distributions and consumption of the aliments, such as ventilation and cleaning of the wards, vessels, &c., the rules given in the third chapter of instructions for *infirmiers majors* must be strictly followed.

Distribution of fuel.

A distribution is done also of wood or fuel for each ward or other part of the service. At a given signal the *infirmiers* attached either to the wards, the baths, the kitchen, the dispensary, or other parts of the establishment, go to the yard with wheelbarrows or baskets, as may be necessary, there to receive the quantity assigned to each department and go and place it in the proper spot intended for it, taking care not to drop anything on their way, nor to dirty any of the places through which they have to go.

Distribution of linen.

Another distribution is that of the linen, for the kitchen, baths, *infirmiers*, or dispensary, in exchange for the dirty, which is of very great importance, particularly for the invalids.

All these distributions must be made in the least possible space of time, the *infirmiers* taking care to start as soon as the signal is given for each distribution.

Changing of linen, &c.

The regulations require that the bed sheets should be changed every fortnight, and shirts and caps every

* We have described already how these cloths (*alèzes*) are formed, in Chapter 4th, Instructions for *Infirmiers Majors*.

five days, but this rule will be strictly observed for such complaints only as are not likely to produce stains of blood or matter, or too abundant perspiration.

Report to *infirmier major* about linen to be changed & damages.

If an infirmier remarks that the linen of an invalid is dirtier than it ought to be, or that it is torn or pierced, or wet, he must report it to the *infirmier major*, who will ascertain the damage done and then change it.

Linen changed whenever wanted.

For patients seriously ill the only rule is, that of keeping them always very clean, and linen well dried and warm must be kept always ready to change them as often as it may be necessary. The dirty linen from under the patients must not remain in the ward, and therefore the changing of the linen should immediately be followed by the transport of it to the dirty linen stores.

Dirty linen removed from the wards.

When the linen under the patients requires to be changed at an extraordinary time, it must be put by in a coffer kept on purpose at one of the ends of the ward, provided it is not too wet or stained with blood.

A coffer kept on purpose for dirty linen in the ward.

When it is wet it must first be dried in some place adapted for that purpose, and when stained with blood it must be steeped in water immediately in the washhouse at the hours it is open, and in a special bucket at any other time in the interval when it is shut up.

Wet or stained linen must be dried before putting them by.

The change of linen at the stores is done in the following way: before the hour appointed, and according to the order of the *infirmier major*, all the linen is counted at the end of the ward or out of it, is bound into parcels, and labelled so as to show the quantity.

Change of linen.

Then, at a given signal, all the parcels are taken to the stores, are unbound and re-counted over, spreading each piece to ascertain both the quality and quantity. When the linen is well re-counted, bound, and placed on horses or trestles by the *infirmiers*, these go to the stores, with the list certified by the person that received the dirty linen, to draw an equal quantity of clean linen which is counted again in their presence, and which they carry into the ward, where it is counted over again in the presence of the *infirmier major*.

Dirty linen taken back to the stores and counted over again.

Clean linen delivered upon certificate of the *infirmier major* that received the dirty linen.

The linen is then placed in the presses, where it is arranged in the most regular way so as to verify always the quantities contained in each, and to take out the pieces that are wanted without deranging what is left.

Linen placed in good order into the presses.

Chapter 7th.

Order and keeping of the Beds, Coffers, Presses, Furniture, and Wards Implements.

All beds to be on a line and at equal distances.

Infirmiers will be attentive in keeping all the beds well in line, which they can do by means of a rope or string the first time, and then by making a mark with black oil paint under the feet of the beds before moving them. An equal distance must be kept between the beds.

Beds made comfortable.

The next and most important thing is the making of the beds with great care, that the sick may be comfortable, well covered, and clean in them.

Bed making.

To make a bed well, all that composes it must be removed and placed on another bed, or on some other support if the two next beds are occupied. After removing the effects of the invalid, the blankets are to be folded longways to prevent their dragging on the floor and removed, then with the same precaution the upper sheet, placing it so as to recognize the upper end, then the bolster is rolled with the under sheet with the same care; the mattress will next be turned, folded in two, and placed on the top of the other things; the straw in the palliasse is then shaken to make it softer and even all over; this being properly done the mattress is replaced, and then the under-sheet and bolster, taking care that the seams of the under-sheet are on the side of the mattress, as that of the upper-sheet against the blanket. The sheets must be first well shaken and well stretched, the blankets are then put over and tucked in under the mattresses, and finally all the effects of the invalids are replaced, the trowsers at the foot of the bed, and over them the cloak; any other object that they may have being put under the bolster.

A well-made bed must present an even surface from the bolster to the foot of the bed without inequalities or stains. The night-table must be on the right side, unless there are reasons for the contrary, placing on its inferior board the chamber-pot with handle foremost, and on the upper board the mug, the ptisan jug, the spittoon, and the vials. The board at the head of the bed is to hold the plate and basin, and what cannot be placed on the night-table.

Disposition of utensils round the bed.

The board at the foot serves to receive the dressing materials, and at the time of the distributions the mug, and the plate and basin.

Foot-board.

The moveable board has a little border and serves as dining-table for the invalids, and sometimes is used at the distributions instead of the foot-board. The moveable board is to be hung with a hook to the bedstead, generally behind the head.

Moveable board.

The bedsteads, boards, night-tables, &c., must be washed and dried and kept with the greatest cleanliness. The spoon is passed into a leather strap on the right post at the head of the bedstead. The coffers or presses are to contain the linen or vessels not in actual use. Everything must be so arranged as to be able to lay one's hand on the object required without disturbing the rest, and also to be able to reckon at a glance the quantity and quality of the different objects contained in each press or coffer.

Bedsteads, boards, &c. cleaned.

Linen and vessels in coffers and presses.

In bringing the linen from the stores attention must first be given that it is well dry, and if found damp it must be aired before putting it in the press or coffer; and, secondly, that in putting the new linen in, it is placed under that still remaining in the coffer or press, which should be used first, to prevent its remaining there too long.

Linen to be dry and placed, the new supply under the other.

These coffers or presses (which must be kept in a state of great neatness,) must have on their lids internally a state of all the furniture of the ward, from which at any moment the quantity in use may be ascertained.

Lists on the coffers or presses.

Their exterior must be kept always clean and dry, and frequently wiped and dusted, never putting on the coffers anything wet lest it might ooze through the lid. Close-stools being the most awkward furniture in the wards there will be none kept there except when absolutely necessary, and then they must close well and be frequently emptied, and removed as soon as they can be dispensed with.

Exterior to be kept dry.

Partial bathing and washing tubs require peculiar care according to the material they are made of. They must all be emptied as soon as they have been used, but if they are made of tin, zinc, or copper, they must be well rinsed and dried with sawdust or by moderate heat, and put in a dry place; while if they are made of wood they must be well rinsed and wiped dry, but then some clean water must be put into them again, to prevent the staves getting too dry and loose, especially in summer. The water, however, should be changed every two or three days, if the tub is not used before.

Tubs of metal or wood.

The metal vases supported in wood frames, or mixed materials, require also special care, lest the materials used for the cleaning of one may prove injurious to the other, by rubbing away the paint or otherwise.

Mixed metal and wood.

The pails and buckets serving for different uses must be kept and washed separately, and distinguished either by some difference in shape or colour, or by tickets stuck upon them, following the directions given on this subject in Chapter 5 of the instructions to the *infirmier majors*.

Pails and buckets.

Some of the utensils require particular care in their cleaning, as the drinking cups, whose pipe, after the whole is well rinsed, must be wiped dry, passing a thin stick covered with linen through it. The bed pans are cleaned by unscrewing first their stopper, then emptying and rinsing them well with hot water till no smell is left. The urinals in the same way.

Cleaning of the utensils.

Syringes are cleaned by firstly unscrewing the main pipe and the smaller, then washing and wiping every part nicely, making sure that the whole is in perfect order when put again together ready for use. The tables in the wards are for the use of the medical officers, the *infirmier majors*, and the *infirmiers*, to put on them the dressing apparatus, or to write what may be required for the service, to put down upon them the ptisans for the sick, and finally for the use of the patients themselves, who can write on them their letters, &c. &c. The benches serve for the invalids to sit round the stoves or tables, or when using the foot baths, and also for the *infirmiers* to lay the bed furniture upon while making the beds.

Chairs and arm-chairs are kept for the severe cases when they can leave their beds while they are made, or to take foot-baths, or when they have to sit up.

The tables and benches must be kept always dry and well dusted, the arm-chairs always clean and dry in their wood frame and seats.

These objects must remain stationary at the places assigned for them unless wanted elsewhere, and then only the *infirmiers* have a right to transfer them. No one should be allowed to get upon them nor to appropriate them to private use.

The ptisans in the wards are placed in jugs, or pitchers, or tin cans. Wooden vases are not well adapted as they are likely to give a bad smell or taste, but when used they must be frequently washed first with hot and then with cold water.

Tin cans are preferable as more durable and easily cleaned, which must be done at least once every day.

All that is in the wards ought to be arranged with the greatest order and symmetry, not so much to please the eye as to help in keeping the order and regularity so necessary to such establishments.

Chapter 8th.

Change of Linen to Military Men under a grave Affection or Complaint.

Great precautions must be taken in changing the linen of the invalids in a grave state of illness. Before changing such a patient the chief medical officer must be consulted to make sure that he can bear the fatigue of it, and that there is no fear of stopping or preventing a salutary perspiration.

In damp and cold seasons, more than in hot weather, one must make sure that neither doors nor open windows bear upon the sick bed with a draft of air.

If only the shirt and cap is to be changed it suffices to avoid the drafts of air and to keep ready the linen well dry and warm, putting on the cap first, then the shirt. To fatigue the invalid as little as possible the shirt is changed in the following way: the dirty or wet shirt is brought up along the back towards the shoulders, then lifting him up gently with one hand the dirty shirt is passed over the head and the clean put on immediately, and then letting it fall he is laid down again and the bed re-arranged.

If the patient is too weak to help himself a little, two *infirmiers* will be necessary for this operation.

If both the bed and personal linen must be changed it is necessary that two persons should do it together. If the next bed is not empty a camp bed or a stretcher must be brought near. A mattress will be put on it, then the patient being lifted in his sheets and blanket is laid down upon it. The mattress of his bed is then folded in two and taken up and placed on the next bed, without causing inconvenience to the invalid that may be lying in it. The paillasse is then shaken and made even, then the mattress is replaced, turned on the other side, if it is wet another is substituted, and then the clean sheets well dry and warm are put on. If no warm sheets are ready some clean and dry are put on, and in cold weather one of the blankets of the patient is spread upon them and the bed is warmed. When the bed is warm the invalid is taken from between his former sheets and is placed in his bed, to which the second blanket is added. After he is replaced in his bed the cap and shirt are changed as was said before. The greatest care should be taken to have the linen always well aired, and warm and ready.

If there are no means of warming the linen another less grave invalid may be asked to keep it under him for awhile till it is warm.

If the *infirmier* is alone he may ask an *infirmier* of a near ward to help him in grave cases, or when he has too many to change. *Infirmiers to help each other.*

Chapter 9th.

Conveyance of the Sick.

The conveyance of the sick must be made with all the necessary precautions not to aggravate their state. The best means of conveyance are, carriages, stretchers, and chairs or arm-chairs. *Conveyance of the sick.*

Carriages are the least adapted in cases of fracture or a grave wound, when a stretcher or a chair are preferable. *Carriages.*

If the stretcher is elastic, the invalid is laid down on his back, and the fractured or wounded limb is rested at the distance or elevation in which it suffers least pain. If it is not elastic a mattress is put on it, or some straw, hay, or any soft elastic substance, at least under the affected part. *Stretchers.*

Two men carry it with two straps or cords, or simply with their hands. It is necessary to pay attention, when straps or cords are used, to shorten or lengthen them, according to the size of the porters, so that the invalid may be kept on a level. *Straps or cords used longer or shorter.*

If no straps or cords are used, if one of the porters is shorter than the other he must put himself at the feet. Besides, they must both take great care not to stumble, and to warn each other of anything that might cause a shaking or jolting. *Shorter porter at the foot of the stretcher.*

They must break the step, viz., start each with a different foot, which will save the invalid the unpleasant movement resulting from the walk of two men going the same step. This important observation was made by an *infirmier* of the Metz hospital. *Broken step.*

In carrying an invalid with a chair he is placed on it as comfortably as possible, with the arms on the shoulders of the porters, each of whom supports with one hand the back of the chair under the seat, while with the other he supports the patient or the chair in front. An arm-chair is preferable as more comfortable for the patient. *Chair.*

To both the chair or arm-chair two sticks can be adapted, and then carried as a stretcher. All these different ways require the step to be broken, as was said above. In carrying an invalid it is necessary also to defend him as much as possible from the sun, or the rain or cold, by covering him with something, and to observe whether he may want anything on the way.

A sick person ought not to be carried on a stretcher on the shoulders of four people, being dangerous for the patient, who may fall, or is in fear of falling, besides the difficulty of finding four men of exactly the same height. *Carrying stretchers on the shoulders of four men to be avoided.*

The best conveyances are either the elastic stretcher or Regnier's. *Regnier's or elastic stretchers are the best.*

Chapter 10th.

Medicaments left at the Disposal of the Invalids.

The medicaments that are left at the disposal of the invalids are ptisans, potions, collyriums, gargles, collutories, injections, fomentations, liniments, lotions, and cataplasms.

Ptisans are the beverage of the patients in the intervals between the distributions; their temperature and frequency must be prescribed by the doctor. *Ptisans.*

The most usual are common ptisan, infusions, decoctions, lemonades, and gum water.

The *infirmiers* will do well to ascertain the object that the medical officer has in view in prescribing a *Specialities of ptisans,*

and different ways in administering them.

ptisan. If the ptisan is given to promote or maintain the perspiration, such as of linden flowers or sarsaparilla, &c., it must be given warm, as well as when the cold temperature might produce some effect on the course of the malady; on the other hand lemonades, and particularly the mineral lemonade, must be given cold. Besides this the lemonade must not be put into vases of varnished clay, but of glass or stone; should not be taken or given oftener than at intervals of half-an-hour, shaking the bottle every time when the tartro-boracic lemonade is given to a patient.

Sudoriferous to be given warm.

Lemonades to be given cold.

Time and quantity of drinking.

The frequency of the drink is to be regulated by the thirst of the patient in general; but for grave invalids requiring the assistance of an *infirmier*, it will be well to ask of the medical officers special instructions to regulate the time and quantity of drink to be given, besides its quality.

Assisting invalids in drinking.

Infirmiers must be instructed how to help the invalids in drinking when they cannot help themselves. If the patient can do a little for himself he must be supported while he drinks, that he may do it more at ease; if he is so weak that he cannot sit up without assistance, the *infirmier* will put the drinking mug within easy reach, then with both hands take up the invalid by the shoulders and pass gently one of his arms under his back and support him with it. With the other hand then free he takes up the mug and gives him to drink, after which he replaces him gently on his bed with his head on the bolster. If the patient is in a state that he cannot be moved without danger or pain, a drinking cup must be used, with the precaution to pour out neither too much nor too little, both of which would cause him painful efforts or weariness.

Use of drinking cups.

Patients refusing to drink.

When it happens that either from delirium or other physical or moral cause a patient refuses to take the prescribed draughts, persuasive modes must first be tried with great patience. If these avail not advantage must be taken of the time when he opens his mouth and teeth to introduce a stopple between his teeth, till he shall be able to pour in a little of the draught; but if all other means prove useless one can press gently the soft parts of the nose, and when he feels obliged to open his mouth to breathe, some drink is gently poured into it, in quantity not too great so as to cause him to cough.

Jugs to be labelled.

To avoid mistakes or confusion every jug of ptisan should bear the number of the bed for which it is intended, and so with other drafts or potions.

Drafts or potions.

Drafts or potions are small liquid medicaments delivered generally in glass vials; they are of several descriptions, such as pectoral drafts, of gum, anodyne, of bark, &c. &c.

Potions are to be taken sometimes all at once, sometimes in small quantities, at fixed intervals, according to the prescription of the doctors as indicated by the dispenser. The *infirmiers* must ascertain what is the relative prescription for each patient, and that they are taken accordingly, viz., at the time or times and in the quantities prescribed, that they are not thrown away, exchanged or sold, helping them to take them when they are not able to do so by themselves. In this last case it is not necessary to lift up the patient as for the ptisans; it suffices to raise his head a little, and without the necessity of using a drinking cup, the neck of the vial or a spoon will serve to introduce it into the patient's mouth. The drafts are generally given by the dispensers themselves. The duties of the *infirmiers* vary with the nature of the medicine to be taken by the patient. They must give them drinks to facilitate their effect.

Broth of vegetables after aperient drafts.

After the first ejection produced by the aperient draft, the *infirmier* will give to the patient some broth of vegetables, and continue to give him about half a pint of it every half hour for three hours afterwards.

Tepid water after emetics.

To those that have taken emetics the *infirmier* must give every quarter of an hour the eighth part of a pint of tepid water, beginning half an hour after the last dose.

Close stools and basins to be kept ready and clean.

The next duty of the *infirmier* is to keep ready the close stools or basins as may be required, taking care that they are perfectly clean.

Boluses or pills.

The boluses or pills require also special attention. They must be taken at the intervals prescribed, for instead of producing the effect desired they would prove dangerous if taken too frequently or at an improper time. They must be swallowed quickly, and when the *infirmier* is to give them instead of the dispenser, he will attend well to the directions that were given with regard to them.

If the patients do not know how to take them, he must cause them first to drink a little ptisan to moist their throat, or procure a plum or a portion of it to wrap it into it to facilitate its being easily swallowed.

Gargles.

Gargles are liquid medicaments used for sores in the mouth or in the throat; they must be kept in the mouth as long as possible, but as there may be also some that are dangerous, they must not be swallowed but completely rejected. To render them useful they must be brought to remain on the affected part as long as possible, and that can be obtained by bending the head on that same side; and if it is required to act on the throat, to prevent the liquid from going down it is agitated by a movement given to the tongue and the air and then rejected.

Collutoires.

The collutoires are medicines more or less liquid or thick, particularly destined for diseases of the mouth. They are used steeping in them a little lint pledget fixed upon a stick, and then passing it over the gums, aphthæ, or ulcerations, to deterge and wash them.

Fomentations, dry or wet.

Fomentations are external medicaments. There are two kinds of fomentations, viz., dry or wet. Dry fomentations are those made with powders, such as ashes, bran, powdered elder flowers, or camomile, &c., that are put into bags and applied warm on the part affected. Wet fomentations are composed of different liquids, such as water, wine, aromatic infusions, emollients, decoctions, &c., &c. into which pieces of swanskin or flannel are steeped and then applied warm on the different parts of the body according to the prescription, taking care to renew them as they get cold. By covering them with a bit of oiled canvas or gummed silk their getting cold is retarded, but these should not be used without consulting the medical officer.

Liniments.

Liniments are made of fat or oily substances applied by frictions on the skin. They are poured out upon a piece of linen or woollen cloth, and rubbed with it lightly on the skin, upon which it is left after that friction. In default of cloth, the hand is used instead.

Lotions.

Lotions are liquid medicaments intended to wash certain parts of the body or wounds, to deterge them and bring on salutary changes. During the dressing the lotions are applied by the surgeons; but when they are to be renewed at other times, they must be repeated by the *infirmiers*, who will take care to make them exactly as the surgeon has made them.

Cataplasm or poultice

A cataplasm or poultice is a medicament made of a soft and pulpy substance applied warm or lukewarm on the different parts of the body to keep them moist.

Poultices may be warmed in two ways, viz., one by putting the material of the poultice into a vase on the fire, stirring it well to prevent its sticking or singeing, the other by putting the poultice on a bit of cloth, and then on a piece of tinned iron, which is placed on the fire and kept there till it gets to the required degree of heat.

Injections.

Injections are liquid medicaments of different kinds introduced into the cavities of the body by the means of a syringe. *Clysters* are liquid medicaments introduced into the body through the lower end of the digestive canal, by the means of a large syringe. They are given either by the *infirmiers* attached to the dispensary, or the wards. Any repugnance to give them would be unjustifiable in the *infirmiers*, who must entertain to no other feeling but that of giving relief to the patients. We shall not describe here the syringe, which every *infirmier* of course knows.

Some cautions are nevertheless necessary to be given regarding its use.

1st. It must be kept always very clean inside and out.

2nd. It must be seen that the hemp round the piston is in good state and fills well up all the circumference of the body of the pipe.

3rd. It must be ascertained that it works easily, and if it is found too hard the hemp must be greased with a little butter or fat.

4th. Then the syringe is filled up and the small pipe is also greased.

5th. The whole must then be tried that no air is left in it by raising the small pipe upwards and pushing the piston till all bubbles are expelled and the water comes out.

6th. It is then ready for use, and when introduced the patient must be cautioned not to keep his breath, which would prevent the liquid from penetrating into the intestines.

7th. The water is discharged from the syringe, pushing the handle of the piston inward with a gentle semicircular motion of the right hand from left to right and from right to left, holding the pipe firm with the left hand.

The use of the pump syringe is so simple that it needs no further directions to be given.

Chapter 11th.

Cleanliness of the Wards.

The cleanliness of the wards must comprise the walls, the ceiling, the floor, doors, and windows, the beds, and all the rest of the furniture.

The ceilings and the walls must be frequently brushed from the dust, and the latter should not be suffered to be dirtied or defaced by marks with colours, or spitting, or scratches, nor sullied when the floor is brushed or washed.

For the keeping of the floors in a state of cleanliness we shall add to what was already said at Chapter 5 of the instructions to the *infirmiers*, that both the invalids and the *infirmiers* must help each other in this respect for the mutual welfare. The invalids will be furnished with bed spittoons, large wooden spittoons, with sawdust near the stoves or tables, and spitting cloths for those who are unable to use their bed spittoon. They will be brought to understand that if all should spit or mess on the floor it would create a great filth, that besides the discomfort and unwholesome effects it would produce, it would also give so much occupation to the *infirmiers* in cleansing that they could not be able to give the attention due to their comfort. The *infirmiers* must for their own interest endeavour to persuade the invalids not to throw anything on the floor, but to throw their slops into their pots, which will save them much labour in washing.

By these precautions the washing of the floors will be seldom required, and the regular sweeping will suffice. Sweeping the floors should be done at least six times every day, that is, before the visit, after the dressing, after the distribution of the morning, after the works of cleaning, after noon, after the dressing, and after the distribution of the evening. But besides this, sweeping must be done immediately whenever any filth is found.

The sweeping is to be done thoroughly, that is, under the beds, the tables, along the walls, in every corner. To avoid raising the dust, instead of pushing it forward the *infirmier* must draw it towards himself, and proceed on so gradually without leaving anything behind. Sprinkling water before sweeping should be avoided, and only done in case of great pressure, for when the water is sprinkled it is very apt to stick together with the dust on the floor. When the washing is indispensable it must be done with brushes and not with brooms, nor throwing water abundantly, but with all the precautions already described at Chapter 5th, Instructions to the *Infirmiers*.

The washing is done differently in the wards that are not occupied from that done in those where are the invalids.

In the empty wards, after having opened all the windows, one range of the beds is advanced in the space between the two ranges, the space which they occupied is then scrubbed with a brush by an *infirmier*, and wiped dry by another with a sponge or a cloth as he advances.

If the floor is too greasy hot water should be used, and some ashes or soda or potash added. When a portion is washed and dried the beds are replaced, and when one row is done on one side, the other is to be done in the same way, and finally the central spaces.

In the wards occupied by patients the washing is done in the same way, except that instead of moving the beds to the middle space, the *infirmiers* wash under and between the beds, and the windows are not open, but only those that cannot injure the patients with their draft of air. The precautions to be used to prevent the floor of the wards being sullied with the mud or dirt brought in from the exterior, or with liquids carried about in pails or other vases, were described at length in the 5th chapter of the Instructions to *infirmiers majors*.

Windows. The wooden part of the windows is washed with a sponge or a piece of wet cloth.

Glass panes. The glass panes are washed in the same way, or if necessary with whiting diluted with water to the consistence of a thin pap. This is spread over the panes with a piece of cloth, or hemp, or wool, and when it is dry it is rubbed off till the glass is perfectly cleaned.

Doors. The doors also must be washed frequently. Besides the cleaning of the doors and windows, their opening and shutting easily and without noise must be attended to. This is obtained by putting some drops of oil at the hinges, locks and bolts, &c. &c.

Couches. The couches also require special cleaning operations.

Bedsteads. The bedsteads must not have stains of blood or any other kind, and if any be on them they must at once be washed and wiped dry, and all the different parts of the bed and particularly the board at the head and feet are to be kept always free from dust or wet.

Bed-boards. The bed-boards must be wiped and dried after each sweeping, and above all after the visits and before and after each distribution.

Night-tables. The night-tables as well as all the other bed-boards must be also washed and wiped dry frequently.

Vases. The mugs, basins, and plates shall be washed after each distribution, and also each ptisan pot before every new distribution of them.

When some sediment is sticking at the bottom or sides of a vase it will be found useful to rub well the angles with a bit of stick covered with some linen.

Bed furnitures. The following rules are given for the maintenance and cleanliness of the bed furnitures.

Paillasses or straw beds. It is necessary to see that the (paillasses) straw-beds are well closed that there are no holes through which the straw may escape, that the straw is not too broken. No fixed time is given for the change of the straw, it must be done as soon as it is so broken as to have no elasticity.

Mattresses. Mattresses under ordinary circumstances should be beaten every six months, but they must be changed when they are wet, stained with blood, or sunk down under the patients.

If they are merely wet from having upset accidentally some water or other not impure liquid, they may be used again when dried without having them washed first; but if they were wet with blood, excremental matters, or perspiration, they must be put away for washing.

Oat-chaff mattresses and oiled canvas. To preserve the mattresses from deterioration, a certain number of thick mattresses stuffed with oat-chaff must be kept in readiness to put them on the top of the wool mattress under the patients, when these are unable to control their excretions, putting

between the two mattresses a piece of oiled canvas whenever those are so abundant that they might pass through such additional mattress.

The oiled canvas should not be put immediately under the invalid because it would preserve a large quantity of unwholesome fluid under him which would produce irritation in the skin, &c. &c. Such patients ought to be removed from the central parts of the ward to one of the most remote ends.

Bed covers. The bed covers having the greatest share in the general appearance of the wards deserve most particular attention.

Their cleanliness must be perfect. They should be always carefully tucked in to avoid their touching the floor and getting sullied ; must be beaten once every month, choosing the time when favourable, and finally they must be kept clean from every stain of broth or wine or any other substance, either greasy or coloured.

Should blood or any other colouring thing be dropped or upset upon them, the stained spot must be immediately washed with alkaline water, if it is so limited as not to give inconvenience to the invalid.

If the stain is much extended they must be changed. The alkaline water may be made with wood or charcoal ashes, or with soda or potash. The quantity of ashes employed should be just sufficient to render the water soft to the touch, but not too much, for it would become caustic and corrosive.

Blankets. Blankets being double in winter and generally the under blanket smaller and coarser than the upper one, it will be observed not to put one in the place of the other. No time can be fixed for changing them, but always when they are dirty or in case of demise. In this last case not only the blankets but all the bed furniture shall be removed, the straw bed emptied, the mattress undone, washed, and beaten ; the straw bed and mattress cases as well as the cloak and trowsers are to be washed also.

Bed sheets. The bed sheets according to the regulations are to be changed every fortnight, as in ordinary circumstances they can be kept clean for that period of time, save in the case of being accidentally stained or soaked with perspiration or other substance. In that event they shall be changed when necessary.

Caps and shirts. Excepting for the above-mentioned extraordinary causes the caps and shirts are to be changed every five days. In case of the probable discharge of a patient, upon the indication of the medical officer the change of the bed sheets can be delayed from one to three days.

Linen trowsers & socks. Linen trowsers must be changed every fortnight, socks every five days.

Table-cloths and napkins. Table-cloths and napkins every five days.

Aprons. Officers' aprons at their request.

Spitting-cloths, cloths and towels. Linen spittoons every day, cloths and towels every day. Each *infirmier* must have two aprons, putting on the clean one for the distributions. He puts on for common work the one that he used the day before for the distributions, and he changes the other one every day.

Washing cloths. The linen and woollen washing cloths are changed only when they are quite worn out ; *infirmiers* have a sufficient quantity of them at their disposal, which they wash after using, and are sent to the laundry only when soaked with greasy matters.

Patients. It remains now to speak of the cleanliness of the patients themselves.

Clothes. The *infirmiers* must pay great attention that all the ward clothes of the invalids, from the cap to the socks and slippers, are all perfectly clean and sound, that is without stains or holes, and not ripped open or buttonless. Should their clothes want repairing the *infirmiers* must report it to the *infirmiers majors*, who will have them done immediately.

Damaging or neglecting clothes. They will also report to the *infirmier major* any invalid damaging or neglecting wilfully his clothes.

Personal cleanliness. They must give also great attention to the personal cleanliness of the invalids, keeping always ready for them hot and tepid water to wash their feet and hands, see that their nails are properly clipped, their hair regularly cut, and their beards shaved twice a week by the barber attached to the hospital as already prescribed in the Chapter 5, Instructions to *Infirmiers Majors*.

They must help those that are unable to help themselves.

Dress. Finally, they must watch that no invalid leaves his bed unless completely dressed in his full hospital suit, and if any of them refuses to conform to this rule the *infirmier* must report him immediately to the *infirmier major*.

Chapter 12th.

External cleaning.

Exterior works of cleanliness. Besides the directions given in chapter 5th of instructions for *infirmiers majors* with regard to the cleaning of the courtyards, staircases, and lobbies, to prevent the dirt from being introduced into the wards, the following are to be added on the same subject, viz. :—

Gutters and streams. In winter all the gutters and streams must be frequently swept, to prevent the water in them freezing and stopping the passage of the water, &c.

Ice-breaking. The ice, when formed, must be broken and heaped up on one side.

Snow. On the snow falling, it must be swept and heaped up on one side, slanting, and if possible remove it out of doors.

Sand, ashes, or sawdust must be spread on the passages whenever it freezes, or the paving is slippery.

Thawing. As soon as it thaws, the ice must be broken and the circulation of the water re-established, the paving washed, and all dirt removed, causing also all to abstain from walking on the loose ground or sand, until it is completely thawed.

Rain and leaves. In rainy weather, besides the precautions to be taken to prevent the introduction of mud and wet into the wards, *infirmiers* must sweep away the fallen leaves to facilitate the flowing of the water, and sweep away the water from the open spaces to make them quite clean.

In dry weather all the fallen leaves must be swept away, the stones raked away from the spots cultivated, and all the stones found loose collected in a heap.

Linen or lint. Any linen or lint that may be found by the *infirmiers* at any time must be picked up and put into the depôt basket.

An *infirmier* leaving on his passage a loose stone or piece of linen or lint without picking them up, is guilty of negleeting his duty, and marked down as such.

External walls. Damaging or defacing the exterior to be reported. The good keeping and cleanliness extends also to the external walls. The *infirmiers* must keep them clean, and must allow no one to dirty or deface them in any way, and will equally watch that no dirtying or damage is caused to be done, or done by any one, either to the walls, the doors, the windows, or the plantations; and, finally, it is part of their duty to report to the *infirmier major* or *officier d'administration* any damage that they may see in any part of the establishment, in order that they may at once provide for its being repaired, according to the circumstances.

Chapter 13.

Heating of the Wards.

Fires. The duties of the *infirmiers* about the heating of the wards, consist in keeping the fires according to the orders they receive, either for their kindling, their duration, or the manner of regulating them. There are as many ways of making and regulating the fire, as there are forms of stoves, and kinds of fuel. There are two principal kinds of stoves, one with grates, fitted for coals, the others without grates, fit for wood fires.

Coal-stoves. The first thing before lighting the coal stoves is to clear the stove of all the ashes, then a few sticks cut small and well dry are placed on the bars and grate so that the air can well circulate between them, then some small bits of dry coals are placed

with care on these sticks. Larger pieces of coals are added then, arranging them always so that some air may circulate between them. The fire is then set to the wood, and when the whole burn well together the half-burnt pieces of coals that may have been found with the ashes can be put on the top of all. The ashes must be all collected into a scuttle, taken out of the ward to some fitted place and passed through a sieve or a basket, and all the coals or half-burnt coals that are left are brought back to the ward, where they may be used to keep up the fire mixed with the new coals.

When the coal fire begins to be low, forming one mass together and thus preventing the air to circulate and keep it lively, it must be broken with a poker and a few new coals added.

To cause the fire to burn slowly, some of the smallest coals sprinkled with water are put on the top of it after it is well lit up. Earth or sand can be mixed also with the small coals in the proportion of one shovelful to seven of small coals, and so having well mixed them the water is sprinkled upon. In putting this mixture on the fire when well lit up, care must be had to leave always room for the circulation of the air; but if for want of it the fire should tend to go out, some opening for the air and smoke must be made through the mass with the poker. When the internal heat of the mass has consumed the coals, and before the blaze goes down, new coals are added, and when burning well another quantity of the mixture is laid lightly upon it, and so on.

The wood fires are prepared in the same way, that is, setting in some faggots and chips, and putting on the top of them carefully the logs, which must be so arranged as to let the air circulate well between them. The faggots and chips are then lit, and when the large wood burns well and the ward is well warmed, if the intensity of the fire is too great, and it is wished to abate it, it suffices to put the logs a little apart one from the other, and they will burn slower, provided, however, they are not set too far apart, which would put them soon out. The wood ashes must be carefully preserved to make with it the ley to clean the linen with.

In removing all ashes from the stoves care must be taken that the ashes are well cold, and that they are put in a safe place where they cannot set fire to anything.

Chapter 14th.

Lighting of the Wards, &c.

The mode of lighting the wards or other places consists of the lamps hanging from the ceiling or hooked at the walls, which are called fixed lights, and those those that are called portable, as lanterns, flat candlesticks (*bougeoirs*), or other hand lights left at the disposition of the *infirmiers* to carry out the service.

The flat candlesticks are to be left exclusively for the use of the medical officers, and the *infirmiers* should never make use of any other light than the lanterns.

These different lights must be kept in good order by the *infirmiers* in each ward, or by one *infirmier* for all the wards, called the lamplighter.

The hand lights and lanterns must be kept very clean and shining. The glass and reflectors of the lanterns must be rubbed every morning with some whiting diluted in water, the oil recipient of the lanterns as well as of other oil lamps must be emptied every morning, well dried, and cleaned outside; and after having ascertained that they are in good repair, they are filled up again with the quantity of oil required for the night, the wick placed in good burning order, or renewed if necessary, and all the lights placed where they are to be found when the time comes for using them. If the oil receipients or the hand lights are too greasy to be merely wiped dry with a cloth, they shall be washed with some alkaline water. All these cleaning operations must be done in an appropriate place out of the wards, where every morning all the oil lights must be conveyed in a tin tray or box, which serves also to bring them back when they are put in order.

Every day, half an hour before dusk, all the lamps, beginning at the darkest corners, must be lit up, and it must be ascertained that they burn well, which will be when the flame is white and rounded at the top. If the flame is reddish and pointed or ragged, the wick must be lowered or trimmed. Lighting time.

Infirmiers will see that none of the lamps go out by themselves, nor allow the invalids to put them out, or to use them to play, to read, or to light their pipes. Putting lights out.

At daybreak they must be all put out.

The wicks, excepting the waxed or woven, must be made by the *infirmiers*. These are made in the following way:— Wicks.

Some newly spun cotton is taken, a certain length being fixed upon. A paper is cut about the same length, then the cotton is cut in as many lengths, measuring them on the paper. When the cotton is cut to the required length, a certain number of threads, from 12 to 18 proportionally to the thickness of the thread and the lamp, is divided for each wick and twisted lightly. The wicks that are not immediately used are preserved in the paper and put by to have them ready when wanted.

Chapter 15th.

Distributions of Provisions to the Infirmiers.

The rules for these distributions are given at length in the 7th chapter, instructions to the *infirmiers majors*.

Chapter 16th.

Inconveniences and Dangers of giving to the Invalids any Aliment not prescribed.

The *infirmiers* must consider it one of the principal duties of their service, the faithful and strict adherence to the prescriptions of the medical officers with regard to the aliments of the patients. They must not deviate themselves, nor allow any one to deviate from such prescriptions. Any *infirmier* disobeying or permitting others to disobey their orders under any consideration whatever, is guilty of infraction of his sacred duty, and of putting in jeopardy the health and life of those whose recovery he is bound to forward according to the directions of the medical officers. The *infirmiers* must be aware that the quality and quantity of the aliments form part of the medical treatment of the patients, and that any increase or diminution of them or variation in their quality may have the effect of neutralizing or opposing the effect of the medicines given to them by the medical officers, who not knowing the quantity or quality of food they have taken, and seeing its effects, would be led into error as to the causes of any change they might find in the consequent state of a patient, and prescribe accordingly. Thus a series of mistakes might happen which might endanger the life of the patient, even if it was not already injured by the mere excess upon the diet prescribed by the medical officer, which is often the cause of the death of a great many invalids, particularly in their convalescence. The *infirmiers* must particularly watch convalescent invalids that they may not procure secretly any food, which they are very apt to do, being commonly affected by a morbid appetite that might endanger their life if imprudently satisfied. Duty of *infirmiers* to adhere strictly to the orders of the medical officers' with regard to the diet of the invalids.

Chapter 17th.

Baths.

There are various kinds of baths or shower baths, (douches). Great baths where the body is wholly immersed, small or local baths for arms, legs, feet, or to sit in. Baths.

Steam or fumigation baths.

Great baths can be of pure warm water, or cold, or aromatic, sulphureous, or other, according to pre- Large.

scriptions. Steam or fumigation baths are given in boxes containing the whole patient up to his neck, into which either the steam or fumigations are introduced through a pipe.

Shower-baths (douches). Shower baths (douches) consist in a reservoir placed at a certain height furnished with a cock from which the water is let to fall on the invalid in the quantity and of the temperature prescribed by the medical officer, and on the part of the body that he indicates.

Cleanliness. The first important care in the service of the baths, is that of keeping constantly clean the bath room, the baths, and the water used.

Temperature. Next to it is the temperature of the water; which is ascertained by the means of a thermometer. Each *infirmier* should be acquainted with the construction and use of a thermometer. The heat of an ordinary bath is 26 degrees, but may vary either by the prescription of the medical officer or the want felt by the invalid.

Upon the request for a bath the bath-keeper should inquire if the temperature is marked on the prescription, if not he prepares the bath and maintains it at 26 degrees, and elevates its temperature by adding more hot water when the invalid wishes for it, unless he has received contrary orders.

Great baths are prepared thus: when all the bathing tubs are well cleaned, the bath-keeper being informed of the number of baths required by the list that each *infirmier* hands over to him after the visit, he fills up with cold water the fifth part of each bath tub to be used, and covers it to keep the dirt out. Then just before the invalids are sent for, he adds the quantity of hot water that is necessary and covers again the bath tub.

Precautions. The precautions to be taken before a patient enters his bath, are—

1st. To place a seat near the bath, that he may undress and place conveniently his clothes.

2nd. To have a board ready upon which he can put his feet on coming out of his bath.

3rd. To keep all doors and windows closed to shut out all draught of air.

4th. That the bath has the right temperature, elevating it if necessary to the comfort of the invalid.

Assistance to disabled invalids. Besides, if the invalid is in any way unable to undress himself, he must be helped to it, and to place himself in the bath. If the invalid is so helpless as not to be able to do anything for himself, the bath-keeper will spread upon a bench a sheet folded in two, will cause the invalid to be laid upon it, and then with the help of an assistant or of two, if necessary, they one on each side take hold of the sheet, and let him down with it into the bath tub, using the same means to draw him out. When a patient is in a state so precarious that he could not be left alone without some possible inconvenience, a bath-keeper or *infirmier* shall remain with him till he comes out.

The bath-keeper must keep his eye constantly watching all the invalids that are bathing, either to add warm or cold water, or to supply any other want at their slightest signal or indication. If he sees a patient too high coloured in his face, he must ascertain that his water is not too hot; if he sees one too pale, he must ascertain whether he is fainting and prevent it by all the means in his power, such as cold water, vinegar, or other suitable substances, which he must keep always in readiness. If nevertheless a patient should have a fit in the bath, the first thing to be done is that of opening the stopper to let the water flow out, then to wipe him dry, and take him out as gently as possible, with the help of a comrade, to lay him back on his bed, and give notice of it to the medical officer.

Warm cloths. Patients coming out of the bath. The bath-keeper must have always ready a warm cloth for each invalid to wrap them in as soon as they get out of the bath. As soon as one of them asks to get out of the bath, the bath-keeper must ascertain that all doors and windows are closed, then he places the board for the feet, and hands him the towel or cloth, helps him to dress again, and if any part of his dress is wanting, he must see it completed, fetching from the ward whatever might have been left behind.

Invalids must not leave immediately the bath-room. The invalids must not leave the bath-room immediately after they have dressed, they must remain there some time till the moisture in the skin produced by the opening of its pores during the immersion has gently subsided in a warm temperature.

Warmer clothing to be added in cold weather. If the weather is very cold and the temperature out of the bath-room is very low, the bath-keeper must cause all to stop in the bath-room till every man is dressed; then it being possible for him to leave the bath-room, he will procure some woollen blankets to put on the men to defend them against the cold air in their passage from the bath-room to their respective wards.

Sulphureous baths. Sulphureous baths are prepared and given in the same manner as the others, with the addition of the sulphuret of potash, in the quantity prescribed, and the difference that these baths ought to be given in wooden or any other kind of tubs, but not of copper or other metal that are generally affected by the sulphur.

Venereal or itch patients. Separate tubs should be kept for men with fever or wounded, and others for venereal or itchy patients. For all these kinds of affections separate linen must be kept for each distinctly, and the same linen should not be used without being first washed, for persons affected with the same complaint, or even for persons in good health.

Fumigations or steam-baths, or boxes. For fumigations or steam-baths, the fire is lit in the fire-place where they are to be warmed, and when the thermometer on the box marks 30 degrees (Centigrade) the bath-keeper fetches the invalid, and having taken all the precautions necessary to shelter him from all drafts of air while he is undressing, causes him to enter into the box and then closes it tight upon him.

Some linen can be put under him to make him sit more comfortably. A woollen cap must be put on his head, then a piece of linen round the lid close to his neck to prevent the cold air penetrating into the interior, or the fumes escaping to cause inconvenience to the invalid.

Water steam-baths. Water steam is produced by pouring water by little and little into the funnel intended for this use, avoiding both to pour in too much or too little, for either would destroy the effect.

Medicated vapours. Mercurial, sulphureous, or aromatic vapours are produced by putting cinabar or sulphur or aromatic substances into the drawer or capsule intended for this purpose, as directed by the medical officer.

It is the duty of the bath-keeper, as long as the invalids are in the boxes—

1. To maintain a fire so as to produce in each box the degree of heat prescribed by the chief medical officer.

2. To maintain for each the fumigations prescribed.

3. To keep his eye continually on each patient, to remark the effect that the steam produces on each; to enliven or slack the fire or vapours as need may be, and to be always ready to give each patient the succour he may want.

Succour to patients in fainting-fits. The internal heat or the quantity of the vapour can be diminished by closing the stoppers, or turning the cocks of the pipes conducting them. These means must be instantly used by the bath-keeper as soon as he sees a patient fainting, and try vinegar, cold water, or other means in his power. If the fainting fit ceases, and the patient wishes to continue, he produces the heat and vapour by little and little as he had done before the accident. If on the contrary the fainting continues, or the patient wishes to go out, he opens gently the box, places him on his bed, and calls the surgeon on duty, without losing sight of the other invalids still remaining in their boxes.

Precautions for patients The same precautions must be taken for the patients coming out of the vapour boxes as for those coming out of the water baths, and more, if possible,

as they were subjected to a higher degree of heat, and consequently their getting cold would prove more dangerous.

When the patients come out of their bath, each bathing tub or box must be emptied and well washed, and rubbed and wiped dry, to prevent any sediment sticking upon it; and when the bathing is over for the day, all the furniture must be swept and scrubbed, such as stools, boards, pipes, cocks, boxes, fire-places; all the linen spread to dry, or taken to the stores, or the wash-house, as regulated; then the whole room, the presses, and all the other objects of furniture, &c., are re-arranged as they were before beginning the bathing, in the perfect order that must always distinguish this part of the service. When all this is done, the provision of fuel is fetched in at the time fixed for its distribution.

The fire-place must also be cleaned, the ashes removed and taken to their depôt, with due attention not to spill them on the way.

Special care must be directed by the bath-keeper to the copper, the pipes, the cocks, and all the other accessories. He must ascertain that no sediments are formed in the copper, and must never fill it up again without inspecting its cleanliness and good preservation.

He will then proceed to prepare the fire, to keep it always ready to be kindled. When the fire is lit, he must see that the copper is kept always well supplied with water, at least up to the mark to which the flame may reach, for otherwise the copper would be soon destroyed. To ascertain what part of the boiler is in contact with the flame, he can when it is empty light a handful of straw under it, that will be sufficient to heat all the parts of the boiler that are not enclosed into the masonry. He will then mark well how far the heat has risen, and cause his assistants to remark it, that they may never let the water be below that level, when the fire is burning under it.

When the delivery of water to the various baths is begun, and a great diminution is produced in the quantity of the water in the boiler, it is necessary either to diminish the fire by covering it with ashes till the fresh quantity of water is newly supplied, and revive it afterwards, to bring the water to the required degree of heat; or, if no more hot water is wanted, the fire can be extinguished. The supply of water into the boiler should be done through a pipe communicating with the reservoir, regulating the quantity of the water to be introduced at a time into the copper or boiler by the means of a cock. A skilful bath-keeper will regulate the supply of the cold water so as to replace always one-half of the hot water drawn with cold water, so that the whole does not become too cold at once.

Wood fire is abated by sprinkling ashes over it, for coals a mixture should be made with coal dust, sifted cinders, clay, and mortar. This mixture put on a vivid coal fire has the advantage of diminishing its intensity, and preserving it for a long time with great economy of fuel.

For the shower baths (douches) the water necessary at the prescribed temperature is put into the reservoir, then the patient is placed on a stool, an arm-chair, or a stretcher covered with oiled canvas, giving him the proper position according to the nature of his complaint. The bath-keeper then directs the prescribed spout of water upon him with all the precautions indicated by the medical officer.

Foot-baths are given in buckets, pails, of copper or of any other material. The patient is seated on a stool, the vase with water in sufficient quantity to cover his ankles is placed under his feet. When it is given merely for cleanliness the temperature should be sufficiently hot to keep the hand in; when it is as a medical prescription the temperature must be directed by the medical officer, as well as the time of its duration, or any mixture of salt, mustard, vinegar, or anything else. Foot-baths for bleeding from the foot require the surgeon's presence during all the time they are continued, and if called elsewhere he will direct that warm water be added at intervals to preserve the temperature always equal, and watch to be kept upon the patient in case he might faint, to have him succoured in time. With all the patients requiring foot baths it is necessary to see that while dressing or undressing they are comfortably seated; if they are too weak they should be placed in an arm chair, or if there is not one, a seat must be contrived with the bolster or mattresses; besides this the body and legs as well as the bath itself should be kept covered, to preserve the heat as much as possible.

Arm-baths. Arm-baths are given in small tubs expressly made. They may be given to the patient either in his bed, with all the necessary precautions not to spill the water on the bed; or he being seated on a stool or an arm-chair, with his arm resting on a table at the proper height, that he may not be uncomfortable.

Hip-baths. Hip-baths are those in which the patient is immersed in water from the hips down to the half of his thighs. The following precautions must be observed for these baths:—

1st. That the invalids undress only their trowsers.

2nd. That their shirts and gowns are raised so as not to get wet coming in contact with the water.

3rd. That their legs are supported in a manner that they do not weigh down upon the fore part of the bath.

4th. That they are well covered.

Chapter 18th.

Directions for washing the Linen, &c., &c.

Separation of cloths for washing. The first caution for the washing is that of keeping always separate the woollen from the linen cloths, and those having served for patients affected by venereal diseases or itch, from all the others. These being impregnated with mercury and with a great quantity of greasy substances would spoil the other cloths, wherefore they must be washed separately with very hot water and strong lye.

Linen cloths. The linen cloths are generally washed with an alkaline solution called lye (*lessive*) and soap.

Woollen cloths. The woollen cloths, such as gowns, trowsers, caps, are washed in lye very diluted, and soap.

Woollen blankets. Woollen blankets are washed with clay without lye and with a little soap.

Lye. The lye is made by dissolving in hot water the crystallized soda or potash. If too hard or in large lumps they are first crushed in a mortar. It can be done also by boiling ashes in water and then decanting the water impregnated with the alkali contained in the ashes which constitute the lye.

Strength. The strength of the solution required for the purpose of washing is four degrees of the Centigrade scale, of the acrometer used, in an inverse ratio from that of the spirits.

In default of aerometer, the proper strength can be ascertained when the solution smarts on the tongue, without being caustic, and is soft to the touch.

There are two ways of doing the washing of the linen with the lye, viz., the old and the new system.

Old system. The old system consists of three operations, viz.—

1st. The steeping the cloths in water to wash off the coarser dirt.

2nd. The tubbing, which consists in laying the cloths spread one above the other sprinkled here and there with soap, putting the dirtier at the top.*

3rd. The percolation, which consists in laying a large thick cloth on the top of the linen in the tub. On this cloth a layer of pure wood ashes is spread two inches thick, and its edges and corners are turned up so as to prevent the ashes from escaping. This being done, pure cold water is poured down upon the ashes till the tub is quite full. The cock at the bottom is then opened, and the solution dropping slowly is received into a recipient of the capacity of about

* Some prefer putting the coarser and dirtier cloths below all the others, that the filth may not go through all.

one half the quantity of the liquid contained in the washing tub.

When the recipient is full it is replaced by an empty one, and the solution thus percolated is placed on the fire till it has attained a slight degree of heat, when it is poured again over the ashes, then the second quantity of lye is placed in its turn on the fire till it attains some higher degree of warmth, and so on repeatedly till it reaches the boiling point. Then it is covered with thick wrappers to preserve the heat as long as possible.

New system.

For the new or steam system it is necessary to have a washing tub and a steam tub. In the washing tub the cloths are steeped into the lye at the strength of two degrees, sufficient to soak them throughout, putting the finest at the bottom; those of a middling quality steeped in lye one degree stronger above the first, and the coarsest on the top, steeped in lye of four degrees of strength. They are then pressed and left so for twenty-four hours, after which they are placed into the steam tub in an inverted order, viz., the coarsest at the bottom and the finest at the top.

The steam tub is fluted in its internal circumference, and has a double bottom, viz., one fixed as usual, and one moveable called the disk, resting a little higher than the other. This disk is perforated with several round holes, into which some conical pegs are introduced, that are drawn out after the cloths are laid spread, leaving thus several interstices for the circulation of the steam. A pipe introduced between the bottom and the disk conveys from the boiler into the steam tub the steam that circulates through the linen passing by the flutings, the spaces left between the clothes by the pegs that were removed, and the pores of tissues.

The tub is then covered hermetically that the steam may not escape from the top. This is done either by laying weights on the lid or by stays fixed against the ceiling. The fire is then lit under the boiler and kept up till the cloths are steamed up to 80 degrees of the Centigrade. The temperature is ascertained either by the introduction of a thermometer into the tub, or better by feeling with the hand the hoops round the tub, which indicate the required degree of heat when they are so hot that the hand cannot bear the contact of them. The fire is then put out and the whole left to cool for the washing.

This steam system, though requiring an apparatus a little more complicated than the other, offers great many advantages, particularly in point of economy of time and money. After the linen has been prepared with the lye in either of these manners, as soon as it is cold each piece is washed in pure water separately, wrung and spread to dry on ropes, stays, or grass, taking care that these are very clean.

Woollen cloths.

Woollen cloths are washed with only soap and water, leaving them to steep in it for 24 hours, and then rubbing them well and washing them in pure water. They are afterwards wrung and put to dry. A light lye at three degrees might also be used, provided there are not coloured facings or metallic buttons, which ought then to be removed.

Blankets are washed with solution of clay; they are afterwards washed in pure, and if possible, running water, then wrung and dried, and then beaten to drive out the earthy particles, if any are left in.

If they are to be put into store they are first fumigated with sulphur in a close room, to preserve them from the moths.

APPENDIX LXXVIII.

Abstract of Regulations for the Barrack Service in the French Army.

War department to pay expenses for all military lodgings, barracks, &c. &c. for the land forces.

The War Department must provide for the expenditure of military lodgings and barracks. The lodgings of all the land forces (the police excepted) are among the attributions of the War Department.

Billeting troops in defect of barracks, and relative payment.

Troops on their passage through a place where no barrack accommodation exists, can be billeted on the inhabitants, and the War Department shall pay for them the indemnities as per relative regulations.

Buildings comprised in the Barrack Service.

Buildings for barrack and other military service.

The buildings comprised under the barrack service are—

The infantry and cavalry barracks, including schools and depôts, officers' quarters, guard-rooms (corps de garde), hospitals, stores for provisions, forage, and military effects, prisons, and places where the military courts sit, with their offices.

Engineers, Artillery, and Schools, Special Administration.

Arsenals, armouries, powder magazines, engineers and artillery quarters, and all the buildings exclusively occupied for the service of those two arms, as well as military special schools, are under their own special administrations.

Inspection of Barracks.

Inspection of barracks.

The buildings comprised in the barrack service are placed under the inspection of the engineer officers, the commandant of the place, the *intendants*, and *sous-intendants militaires*, the guards of the engineers, and the barrack-keepers.

Commandants of the place charged with the military police of the barracks.

The commandants of the place are charged with the military police of the buildings occupied by the troops.

Engineer Officers.

Engineer officers and *intendance militaire* charged with the administrative police of barracks, works, &c. &c.

The engineer officers, jointly with the *intendance-militaire*, are charged with the administrative police of the military buildings, with the duty of proposing and directing the execution of all the works of construction, reparation, and preservation of the military buildings, of verifying (when called for) the plans and works that the administration causes directly to be executed — with the exclusive protection and *surveillance* of the unoccupied military buildings, or having no special destination —with the supply and preservation of the furniture of the buildings serving for the lodgment of the troops—with giving their opinion on and contributing to the digest of the reports on all that regards the military buildings—with the signature of the agreements for barrack hiring, in accord with the *sous-intendants militaires.*

Intendance Militaire.

Intendance militaire.

The department of the *intendance militaire* is charged with the administrative police of all the military buildings conjointly with the engineer officers—with the distribution to the corps of the different quarters assigned to them, in conformity with the plan of the distribution of quarters of the different corps to be lodged—with all that concerns the passing and the execution of the leases for the hiring of buildings, in default of military buildings,—with the assistance of the engineer officers to establish the suitable conditions for the passing of the leases—with the storing and the preservation of the barrack effects, which are specially placed under their charge by the present regulations and by other administrative arrangements.

Barrack-keepers.

The barrack-keepers are appointed by the minister on the recommendation of the Directors of Fortifications. They are charged with the preservation of the lodgings and barracks, and the keeping of the furniture appropriated to the use of the troops.

Barrack-keepers should be appointed only to places serving permanently for the accommodation of officers and troops, having at least from 40 to 60 rooms. If they have not so much room accommodation, several smaller barracks are put under one barrack-keeper.

Barrack-keepers ought to have their lodgings in the building placed under their care, and when several are under the care of one barrack-keeper, he shall live in that where his presence is most useful.

Barrack-keepers have a right to one large and one small room, or to two rooms unfurnished.

They are not allowed to sell food or drink to the men or non-commissioned officers, and although they do so it is only on toleration of an old abuse.

They are under the immediate orders of the chiefs of the Engineer Department, but they must account to the *sous-intendant* for the distributions of the lodgings, and for the barrack effects in the barracks placed under the charge of the *intendance.*

The *sous-intendants* request the engineer chiefs to inflict the punishments of discipline on the barrack-keepers convicted of negligence, and the engineer officers comply with such requests, reserving to account for them to the superior authority whenever they think proper.

They have charge of all the keys and all the furniture in the unoccupied parts of the building, and are responsible for them. The keys must be disposed in order, numbered, locked in a press with a grated door. They shall deliver no key without a written order of the *sous-intendant*, or of a chief engineer.

They are obliged to maintain clean the inside and out of the buildings that are unoccupied, for which purpose they will be furnished with the necessary utensils by the engineer department. They shall, as required, open and close the windows of the empty rooms.

They must visit at least once every day the places occupied, inform the heads of the corps of any damages they detect, and report the same also to the chief of the engineers, or to the *sous-intendant*, as they happen to affect places under charge of either of them.

Wherever an engineer officer resides, the barrack-keeper shall present himself to him daily, to receive his orders, and where there is none, he will make a weekly report of all that has taken place during that period.

Care and Preservation of the Buildings attached to the Service of the Administration.

The charge and preservation of these buildings is entrusted to the *officiers d'administration* and the contractors. They keep the keys and are responsible to the state for the property.

Distribution of Quarters in each place.

The distribution of quarters in the military buildings is established by the chief engineer officer, the *sous-intendant*, and the commandant of the place, in whose office they shall assemble for the purpose. They prepare together a return on form No. 1, comprising all the buildings belonging either to the state, to the towns, or rented, intended for the service either of military barracks or administration.

Detailed Report of Barrack Accommodation to serve for that purpose.

The chief engineer officer must make a detailed report showing the capaciousness of each building and the destination of its rooms. This report is preserved in the archives of the place, and is presented every year to the inspector-general of the engineers, with a note of the modifications which have taken place since the last inspection. The form for this report is given under form No. 2. The dimensions of all the localities must be indicated in it. commodation.

To facilitate the allotment of the quarters, and more especially the verifications by the inspectors general and directors of fortifications, it is prescribed that in each establishment there should be a small atlas of all the military buildings in plain outline, on the scale of about half inch per yard. The form No. 1 is addressed by the chief of the engineers to his director. Atlas of all military buildings to be kept in all the establishments.

General Reports by Military Divisions, presented by the Director.

When the director of the fortifications has collected all the reports and propositions for the different places under his direction, he makes out from them his general reports by military divisions (form No. 3), to which he joins, if necessary, his observations, and addresses them with the special reports in support, to the general officer commanding each military division under his direction. Reports by division.

The general officer communicates the general report of the distribution of the quarters to the *intendant* of each division, and both, after having consulted together, will add to it their respective opinions. The general officer sends then this report and the documents in support to the director of the fortifications, who transmits them immediately to the Minister of War. General report transmitted to the *intendant* and then to the director of the fortifications, who submits it to the minister.

The Minister of War fixes the distribution of the military quarters for each place, and sends the reports to the generals of division, who transmit true copies of them to the directors of the fortifications and to the military *sous-intendant.* These send immediately extracts of them to the chief officers of the engineers, and to the *sous-intendants* charged with the service of the barracks in each place. The miuister sanctions the distribution of quarters

Revision of the Distribution of Quarters.

In each year, from the 1st to the 15th of November, the commandants, the military *sous-intendants*, and the chief officers of the engineers, meet to see if any alterations are necessary in the existing distribution, and if necessary they make out a new report and send it to the minister for his approbation. Revision of the distribution of quarters.

No change can be made in the distribution unless approved by the minister, and only in cases of great urgency the commandants of divisions can make some alterations on their own responsibility, provided they report them immediately to the minister. No change allowed without the sanction of minister, except in cases of urgency.

Chapter 2d.

Distribution of Quarters for Troops in Barracks.

Composition of the cadres of the different arms.—Effective of these corps. Nature of lodging for officers, non-commissioned officers, and soldiers. Accessories to lodgings. Organization and furniture of the different parts of the lodgings. Lodgings for general officers and other detached officers.

Basis on which the distribution is founded. Distribution of quarters in barracks.

The distribution for troops in barracks must be based upon the following considerations, viz., 1st. The composition of the *cadres* of the different troops. 2d. The effective of the corps. 3d. The nature of the lodgings destined for the officers, non-commissioned officers, and soldiers. 4th. The accessories required for the lodgings. 5th. The regulations concerning the organization, appropriation, and furniture of the different localities.

1st *Cadre* of an Infantry Regiment.

Officers.

Staff.	Colonel			1	
	Licut.-Colonel			1	
	Chefs de Bataillon and Major			4	
	Capt. Adjutant Majors			3	
	Captain *d'habillement*			2	16
	Ensigns attached to the Treasurer			1	
	Ensigns Standard bearers			2	
	Surgeon Major			1	
	Assistant Surgeon Majors			2	
Companies, 24.	Captains	1	3	24	72
	Licutenants	1		24	
	Ensigns	1		24	
	Total Officers				88

Troops.

Petit État Major, Minor Staff.	Adjutant non-commissioned Officers			3	
	Drum-Major			1	
	Corporal, drummers, and buglers			3	
	Corporal Sapper			1	
	Sappers			12	72
	Band Master			1	
	Music Corporal			1	
	Musicians			50	
Company out of the ranks.	Serjeant-Major schoolmaster	1		2	
	Serjeant-Major baggagemaster	1			
	Paymaster and Adjutants, Serjeants.	2			
	Clothing storekeeper and fencing-master	2		7	
	Armourer, tailor, and shoemaker	3			
	Fourier (Qr. Mr. Serjt.)			1	
	Corporals. Paymaster clerk	3			77
	Hospital clerk	1			
	Workman armourer	1		9	
	1 workman, tailors, and shoemakers	4			
	Soldiers. Colonel's clerks	5			
	Workmen armourers	2			
	Workmen tailors	27		57	
	Workmen shoemakers	23			
	Cantinecr, *enfant de troupe*			1	
Company.	Serjeant-Major	1		24	
	Serjeants	4		96	
	Fourier (Qr. Mr. Serjt.)	1		24	
	Corporals	8	17	192	408
	Drummers or buglers	2		48	
	Cantinecr, *enfant de troupe*	1		24	
	Total of Troops				557

Peace footing.

The above organization of the regiments and battalions of infantry is on the peace footing. In that case the minor staff and the platoon out of the ranks are with the staff.

War footing.

On the war footing a depôt is formed for each regiment, which is composed as follows :—1st. For the regiments abroad, of a company per battalion or three companies, and most of the company out of the ranks, forming a total effective of about 12 officers and 300 men.

2d. For the regiments on the war footing at home, of the 5th and 6th companies of each battalion, or six companies, and most of the company out of the ranks, which form an effective of about 21 officers and 500 men.

It is therefore necessary whenever it is a question of lodging a regiment or battalion to consider whether it is on peace or war footing, a battalion with or without staff, or a depôt of a regiment.

Cadres for all other corps.

In the same way the *cadres* for the lodgings of all the other corps are made according to their effectives, as—

Rifles,
Engineers,
Cavalry of reserve, of the line, or light.
Artillery.
Veterans,
Transport corps, &c. &c. &c.
Sappers and miners, &c. &c.

Lodgings to each according to rank.

Lodgings to be assigned to the officers, non-commissioned officers, and soldiers, according to their rank or functions.

The following Schedule shows the kind of Lodgings to be assigned to each respectively.

Individuals to be Lodged.	Lodgings to which they are entitled.	Remarks.
1 Colonel or Lieut.-Colonel.	3 rooms, 1 ditto for servant, 1 kitchen, stabling for 3 horses each.	Superior officers are lodged in the military buildings when that can be done conveniently.
1 *Chef de Bataillon.*	2 rooms, 1 ditto for servant, 1 kitchen, stabling for 3 horses each.	A certain number of officers of the corps must be lodged in the barracks. At all events the adjutant-major on week duty must reside there, as well as one of the surgeons of the corps, who must do the night service if needed.
1 Captain, 1 Chief Surgeon.	2 bed rooms, 1 office room each.	
1 Paymaster, 1 Director of Clothing	These have right to an extra room each if the locality allows it.	
1 Licutenant, 1 Ensign	1 bed room, 1 office, 1 room each.	
1 Adjutant - N. C. Officer	1 room each in the barracks near the battalion.	If room is deficient the adjutants lodge together.
1 Veterinary, 1st and 2nd Class.	1 room, 1 office in the military buildings, each.	
1 Assistant Veterinary, 1st and 2nd Class.	1 room, each.	
1 Drum-Major.	1 room, each.	If room is scarce the drum-major and the band master shall be placed in the same room, or the band master's room can be used for studying room.
1 Band Master.	1 room, 1 studying room in the atties.	
Maréchal des Logis Bugler, *Brigadier* Bugler	1 room for both.	
1 Baggage-Serjeant.	1 room.	
The Work Masters.	2 rooms each, 1 for workshop	The workshops may be adjoining or separate.
3 Serjeant-majors Maréchaux des Logis, Fouriers.	1 room and 2 beds, two by two	Within their company if possible.
Serjeants, Maréchaux de Logis.	1 room for those of each company or troop.	
Corporals or Brigadiers.	With their men.	
Drum or Bugler Corporals.	1 separate room - -	If possible they may be lodged with the sappers or the grenadiers.
Musicians -	Like the soldiers - -	If musicians are considered as lower staff they are lodged each separately.
Soldiers -	By wards per company or squad	As much as practicable.
Enfants de Troupe.	All those attached to one regiment together, under a serjeant or a corporal	This is more for convenience than for regulation.

Accessorial localities.

The following shows all the accessorial localities that should be provided in the apportioning of barrack accomodation, besides the lodging rooms. Those that are not strictly indispensable are marked with an asterisk, and although they should be comprised in the construction of new barracks, they cannot be exacted if the locality does not offer such conveniences, and would imply a great expense to procure them.

		Remarks.
For Infantry.	Kitchens.	
	Retreats.	
	Lodgings for washerwomen and canteen women (*vivandières*).	

	Remarks.
For Infantry.	
Non-commissioned officers' mess room and canteen.	
A police guard room.	
A police guard room for the soldiers.	
*A police hall for non-commissioned officers.	
*Cells of discipline.	
Clothing stores.	
Arms stores.	
*Offices for the major, the paymaster, the captain, director of the clothing, and the lieutenant in charge of the arms.	If these officers are lodged out of the barracks or have no rooms for offices.
An armourer's forge,	
Tailor's workshop and cutting room.	
Shoemaker's workshop and cutting room.	
Regimental school room.	
*Leeture room, to serve also for report room.	
*Dancing school.	
*Musie sehool.	
*Fencing school.	
Regimental infirmary.	
Regimental powder magazine, and a shed for making eartridges.	
*Washhouses - - -	Usually the washhouse is with the washerwomen's lodgings.
*Soldiers' bathing place.	
*Stables for the horses of the superior offieers.	
*Small engineer stores.	
Fire-engine house.	
Shooting gallery or ground.	
Field for drill.	
*Military gymnasium.	
*A hall for drilling reeruits in winter.	
For Cavalry.	
A harness storeroom.	
A saddlery per squadron.	
*A forage magazine to contain 4 days distributions.	
A forge and a shed for shoeing 12 horses.	
Veterinary stables.	
Shed for the operations of veterinary pharmacy, and room for disinfection.	
A shed for the waggons.	
*A veterinary room.	
A eovered riding-school.	
*An uncovered do.	
A small enclosed space for instruction and place for the school materials.	
*Shed for the winter drills.	
*Shed for the carriages.	

Officers' Lodgings in Barracks.

All the officers' lodgings must be oceupied by an equal number of officers of each rank. In case of deficieney of room to eontain them all, the barrack lodgings are given in preferenee to offiecrs that are younger in service or in age, excepting the dispositions to the eontrary that the chiefs of the corps may deem better for the service.

The furniture of the eaptains, lieutenants, and ensigns' rooms is furnished by the contractors for military beds, and is composed for each officer of a complete bed, a chest of drawers, a toilette, a writing table, a night table, an arm chair, and three chairs.

The looking-glasses are furnished by the engineer eorps, in the following measures, viz., 31 by 23 inches, in a simple mahogany frame. Looking-glasses provided by the engineers on regulated measures.

The lodgings for the superior officers are delivered empty, with only three looking-glasses, viz., two of the above dimensions, and one larger, that is, 41 by 31 inches, in a gilt frame. Superior officers' lodgings delivered empty, except looking-glasses.

Soldiers' Wards, Organization and Furniture.

The space allowed for each man in the ward is established at 425 eubie feet for each infantry man, and 494 for each cavalry man. The regulated iron single beds should have 27 inches width, and the space between two beds about 10 inches. The beds must be placed close to the wall without touching it. Sufficient room must be left for benches, tables, and arm-racks. Soldiers' rooms. Single iron bedsteads, distance from each other and the wall.

The approaches to the windows must be easily accessible and free. Windows easily accessible.

Above the bed-heads, at the height of 44 inches from the ground, a long shelf 12 inches wide runs all along the wall. The baggage is placed upon it. Under this shelf, in the space between the two beds, is fixed an iron hook to hang on it the cartridge-boxes and sabres. Shelf above the bed-heads for baggage. Hook for cartridge box and sabre.

For the cavalry a second shelf runs along the wall at only 68 inches from the ground, to whieh an iron hook is fixed for the straps and cartridge-boxes. Besides this another iron hook is fixed in the wall, also between the beds, for the cavalry; to hang the sabre. Two more are equally fixed in the wall at the head of each bed, and at 32 inches from the ground, to receive the objects of baggage, and the bag as well as the bridle. This requires that the beds be about 8 inches detached from the wall. Some hooked nails are added to the board or shelf to hold the shoes. All these hooks may be separate or fixed on a common plate which is screwed to the shelf. The boots are put upon the shelf. Double shelf for cavalry. Double hook for cavalry. Two extra hooks for effects and bridle. Hooks separate or on a common plate.

The bridles should be hung on racks fixed to the walls of the wards where there are no beds. Bridle racks.

Racks for arms ought to be placed 40 inches above the ground, and contain 10 stands of arms each. In the newest system the racks are formed by a but-end stand and a barrel-stand, on moveable cast-iron brackets. There are in the but-end stand notches for the ends of the lances. For all kind of muskets, rifles, or other arms, the barrel-stand is fixed at 82 inches above the ground, and the but-end stand is placed 44 inches below for muskets and riffes, and 30 inches below for shorter arms. Arm racks, moveable. Muskets, rifles, &c.

Pistols are hung to iron hooks on a wooden listel in the wall 8 inches under the barrel-stand. Pistols.

When lances are to be placed in the rack the barrel-stand is raised 110 inches above the ground, and the but-end stand 102 inches below. Lances.

The cuirasses ought to be hung on hooks as are the bridles, but are generally placed on the shelves with the baggage. Cuirasses.

In each ward for 16 men effective shall be furnished a table 78 by 28 inches, two benches of the same length, and a bread board 78 inches long by 23, placed 78 inches above the ground, situated above the table. Tables, benches, bread board.

The cleaning of the tables must be done on the spot without removing them. Tables cleaning.

All the utensils, brooms, &e. are chargeable to the corps. Utensils.

The number of each ehamber and of the beds it eontains are inscribed above the door. No change ean be made in those numbers without authority. Numbers of chambers and beds.

In the wards or rooms the following forms or schedules must be eonstantly placed on the walls:— Tablets hung on the walls.

1st. External marks of respect (printed).
2nd. Duties of brigadiers or corporals (id.).
3rd. The state of the barrack (in writing).
4th. Muster-roll (id.).
5th. Regulation on the keeping of the arms and accoutrements (printed).
6th. General instructions for the posts of internal police, kitchens, infirmaries, &c. &c. (in writing).

7th. A ticket above the bed of each man, showing his name, his number, and that of his arms.

Name of each man inscribed.

The name of each man must be inscribed, also, above his arms, &c.

Barrack board furnished by the engineers, the others by the corps, hooks and nails by the engineers.

The Engineer Department must furnish the boards showing the barrack statement; all the others must be found from the fund of the corps in occupation, except the hooks and nails to hang them, which are to be furnished by the engineers.

Double boards in N.C. officers' rooms.

The non-commissioned officers' rooms are furnished like those of the soldiers, with a proportionally double quantity of boarding

Tables.

The tables may be 60 inches long.

Arm-racks.

In the rooms of the serjeant-majors and *maréchaux de logis chefs* a rack shall be placed for about 5 stands of arms, and the quantity of boards allowed for eight men, in case they have charge of the baggage of men absent or sick.

Drawers to tables.

The tables in these rooms ought to have drawers with locks and keys for the books.

Kitchens.

Kitchens.

Each barrack or lodgment shall have separate kitchens, paved and furnished with the necessary ranges and ovens.

Choumara, Vaillant, and Key cooking apparatus.

The most approved models are either that known as *Choumara*, made in bricks, or those in cast-iron by François Vaillant of Metz, or Key of Strasbourg.

Kettles.

The kettles for these ranges are in pairs, and contain each 75 quarts, and serve for the soup rations of a company. The principle of preparing the rations in common by whole companies has been acknowledged to be the best.

Designation of the Corps.		Number of Kettles.	Remarks.
Infantry.	Company of light and line infantry	1	
	Section out of rank of rifle battalion	–	To be joined to one of the companies.
	Company of the rifle batalion	2	
	Platoon of workmen of the administration out of ranks	1	
	Company of battalion of administration workmen, or army works corps	2	
	Company of pensioners, non-commissioned officers, and fusiliers	2	
Cavalry.	Platoon of cavalry out of ranks	1	When it cannot be joined in total to a squadron.
	Cavalry squadron	2	
Artillery.	Platoon of artillery out of ranks	1	When it cannot be joined in total to a battery.
	A battery of artillery on peace and half war footing	2	Comprising the men of the depôt.
	Battery of artillery on war footing	3	
	Two companies of the park train (peace footing)	1	Comprising the men of the platoon out of ranks.
	Company of the park train on war footing	2	
	Company of the pontonier battalion	1	
	Company of artillery workmen	1	
	Full companies of pensioner gunners	2	
Engineers.	Company of engineers out of ranks	1	
	Company of conductor sappers on peace footing	1	
	Company of conductor sappers on war footing	2	
	Company of sappers and miners of the engineers	2	
	Company of army works corps and pensioners of the engineers	2	
Military equipages.	Company of army works corps at regulation effective	1	
	Company of army train	2	
Gendarmes pensioners.	Company	1 *	

* For the variations in the effectives it is left to the discretion of the *Sous intendant Militaire* to apportion the size and number of the kettles.

Each mess should be furnished with a saw and a hatchet, the cost and maintenance of which is to be made good by the corps, as well as that of a rack. A chopping block also must be kept near the kitchen, and the cost borne by the engineers.

Each mess to have a saw, hatchet, rack, a chopping-block, dressers.

These must also furnish the kitchens with one dresser 27 inches wide and 78 inches long for each kettle.

Dressers.

Also conveniences for keeping the vegetables must be furnished, combining with the dressers some shelves or cupboards.

Shelves and cupboards.

The kitchen must have a small store place to keep wood and coals, and if possible two doors, one for ingress and the other for egress.

Wood and coal store.

Retreats.

There must be one seat at least for every 80 men. The seats for the soldiers shall be plainly cut circular in a flagstone.

Retreats.

Besides the soldiers' seats, there must be separate closets for the officers and the women living in the barracks. The pans must be well set as to prevent every exhalation. Where the sewers are not laid, a ditch must be dug sufficient to contain 20 cubic inches per man and per year, so that there may be no need of emptying it for a year. Where the contents of the ditch are used for liquid manure or otherwise, and it is important to separate the liquids from the rest, a second ditch is dug, communicating with the first through a grate, allowing the liquids to flow through it. The retreats must be cleaned every morning by a fatigue party.

Separate closets for officers.

Sewers.

Daily cleaning.

Lodgings for Washerwomen and Cantineer Women (Vivandières.)

Each washerwoman or cantineer woman is entitled to one room on the ground floor without furniture.

Their number is fixed as follows :—

Washerwomen and cantineers (*vivandières*) apartments.

For a regiment of light infantry and of the line on peace or war footing	Washerwomen and vivandières. 4
Do. of cavalry of the line, peace or war	1
Do. light cavalry	,, 1 ,, 2
Do. battery of artillery mounted	,, 1 ,, 2
Do. do. not mounted	,, 1 ,, 1
Do. of engineers	,, 1 ,, 1
Battalion of pontoniers	,, 1 ,, 1
Do. of army works corps	,, 1 ,, 1
Squadron of the train of the park of artillery	,, 1 ,, 1
Corps of the military train of equipages	,, 1 ,, 1
Company artillery and engineer works corps	,, 1 ,, 1
Do. of military equipages	,, 1 ,, 1
Do. of pensioners	,, 8 ,, 8
Do. of discipline	,, 4 ,, 8

Washhouses.

It is customary to have two washhouses for each infantry battalion and one for each squadron of cavalry, or two batteries of artillery.

Wash-houses.

Mess.

The mess for non-commissioned officers in separate places should be regulated as follows :—

Non-commissioned officers' mess.

The adjutants together. The serjeant-majors and the *maréchaux de logis* together. The serjeants and *fouriers* together per battalion.

The *maréchaux de logis* and *fouriers* of several squadrons together.

When battalions or squadrons are separated, the adjutants mess together with serjeant-majors and the *maréchaux de logis chefs.*

No special place is destined for the soldiers' canteens, which are supposed to be at the cantineers' (vivandières). No furniture is found for these mess places.

Guard Rooms.

Guard rooms occupied by military pickets, either for the custody of arms, military stores, or other

Guard-room furniture.

such establishments, or for police purposes, are furnished partly by the corps of the engineers, and partly by the contractors for the army beds. The corps of the engineers shall furnish soldiers' camp beds, tables, benches, sideboards, bread-boards, tablettes, and arm-stands in proportion to the number of the men they are to contain.

The contractors shall furnish—

1st. For the officer: a folding arm-chair, a straw chair, a stove and pipes, a candlestick, an inkstand, a water jug.

2nd. For the soldiers: a stove and its pipes, a candlestick, a lantern for the rounds, a bucket, a wheelbarrow, a stretcher, a *boite de Ronde*, *marrons de Ronde* and for heating, watering can, an axe, a saw, a trestle, a round shovel, and broom.

These effects are under the charge of the chief of the post, who in case of deficiency must report immediately. The inventory of them must be always kept by the side of the orders. The officer on round of inspection and the adjutants must ascertain their existence, and if deficient, the picket in occupation of the post and its chief are chargeable for the value, and the objects are to be replaced.

Cells.

There must be 4 cells for each infantry battalion, and 6 for each cavalry regiment. The cells must have at least 140 square inches of surface.

Places of punishment must all be furnished with camp beds and water buckets.

Clothing Stores.

The clothing stores for each regiment must have one or more rooms sufficiently large to contain 25 beds. For the clothing of the absent soldiers, a separate closet must be provided, as well as for isolated battalions, or for smaller detachments.

The engineer corps furnish, if possible—

1st. Four tables 78 inches, or a large table of an equivalent surface, the necessary benches and shelves.

2nd. One table of 78 inches placed on trestles to serve for the measurement of cloth. It is stamped at the expense of the fund of the establishment.

3rd. A jack roller upon which the cloth is rolled for inspection.

4th. One hundred saddle trestles, for a cavalry regiment. Where the effects of absent men are preserved, it is necessary to keep some tablettes and portemanteaux.

There must be also an arms-stand when there is a fraction of a corps, and no magazine to put their arms in.

Arms Stores.

Special arms stores must be established at the barracks of a full regiment, at those of battalions or squadrons on war footing, or of a regiment with its staff in the same locality, and at the depôts. A room large enough to contain four beds will suffice for this purpose.

The corps of the engineers shall furnish it with a table and an arms stand for 100 complete sets of arms.*

Workshops and Armourer's Forges.

The workshops must be proportionate to the number of the workmen on the establishment.†

The master armourer follows the war battalions, and the assistant master remains at the depôt; each having a separate forge.

Very small rooms may suffice for the cloth cutting.

Bootmakers. The bootmaker's, armourer's, and saddler's workshops must be on paved ground-floors.

Armourer. No furniture exeept the armourers anvil and bellows. No furniture is allowed for the workshops except for that of the armourer, where the corps of the engineers must place, besides the forge, an anvil, and the bellows with their pulling chain.

If the workmen have to sleep in the workshops the usual furniture in suitable proportion is placed in them.

Regimental Schools.

Schools. Each regiment of infantry or cavalry has a school, consisting of two divisions, the second of which is specially intended for the non-commissioned officers. Each detached battalion of infantry has a school, and if possible a school is open for each detachment of the strength of two companies. When a cavalry regiment is divided in detachments, the school remains with the fraction of the corps comprising the staff, but the detached squadrons may also have their school.

Each regiment to have its school. Each regiment in garrison in a town must have one school for the whole regiment, except when divided in very distant barracks in a very large town, where they may be considered to be in different garrisons.

Separate school for each regiment. The same locality cannot serve for the school of more than one regiment, or for battalions of different corps.

The school room should be such as to contain—

For an infantry regiment of 3 battalions,	pupils	150
For 2 battalions - - - -	„ -	130
For 1 battalion - - - -	„ -	80
For 1 cavalry regiment - . -	„ -	80

There should be two rooms at least, that is, one for the first and one for the second class, in each school.

School furniture. The furniture should consist of,—

1st. A raised platform with desk for the directing officer.

2nd. Three chairs.

3rd. A sufficient number of tables, three-fourths of which have slanting tops, the rest horizontal.

4th. A sufficient number of benches, proportioned to the tables.

5th. A stove with all its accessories.

6th. Two ranges of wooden listels around the rooms except on the side of the platform, one at 70 inches from the ground, with its hooks and nails to hang writing, reading, and arithmetic copies; the other eight inches higher, with a sufficient number of pegs to receive the head-dress of the pupils.

The Rolland method of primary instruction dispenses with the necessity of having desks and tables in the room serving for the first degree of teaching.

1st class. For this method, the teaching of the first degree of the first class requires a reading board, black regulator board, and a platform.

The black board must be 40 inches by 24; it is placed against the wall above the platform and is surmounted by the reading board. (*See Rolland's Manual.*)

2nd class. For the second class the disposition of the room is the same, substituting for the reading board a reckoning board.

For the teaching of the second class there must be two black boards and four wall maps, viz., a map of the world with names, a map of Europe with names, a map of the national dominions with names, one ditto without names, and a board with the system of measurement.

All these objects above specified, whether paid by the corps of the engineers or not, are entrusted for their preservation and renewal to their care, as is all the other barrack furniture.

Inventory of the school furniture. The school furniture is inventoried, and on every change of garrison the state of the material is verified by the chief of the engineers and the director of the schools, and any damage or loss found is charged and paid for by those who caused them.

* The arms store room must be separate from the clothes store room; the master armourer having free access to the former.

† When several battalions or squadrons on the war-footing with their staff are united, small workshops are to be prepared for them. The masters with a large portion of workmen are left at the depôt, and the war battalions or squadrons are followed by about one-third of the workmen with the assistant masters.

The next Form is adopted for Inventory of Objects and Damages.

Objects.	Number. By Infantry Regiment.	Number. By Battalion and by Regiment of Cavalry.	Price of each. £ s. d.	Remarks.
Tablettes - -	200	100	0 2 0	The corps may have as many boards as required by the number of their schools.
Stumps - -	200	100	0 0 0½	
Reading Board -	1	1	0 2 6	
Reckoning Board -	1	1	0 4 0	
Grammar Board -	1	1	0 4 0	
Black Board - -	1	1	0 8 0	

Slight wounds, cutaneous and venereal diseases, to be cured in the regimental infirmaries.

Regimental Infirmaries.

The military surgeons must treat in the barracks all slight wounds, cutaneous and venereal diseases.

Infirmary accommodation.

It is therefore necessary to have in each barrack, in a part as much as possible separate from the rest of the building, the following accommodation, viz.:—

A ward for slight wounds and venereal diseases.

1st. A ward for the wounded and venereal cases, containing beds at the rate of one for every hundred men of infantry, artillery, or engineers; and one for every sixty men of cavalry, reckoning at the full complement of the organization.

A ward for men affected with itch.

2d. A separate ward for the men affected with itch, at the rate of one bed with half furniture for 200 men of infantry, artillery, or engineers, and for 100 men of cavalry.

A room for men convalescent.

3rd. A ward for convalescents with one bed for every 100 men.

4th. A room with fire-place for cooking, and preparing ptisans.

Bath-room.

5th. A bath-room with two bathing-tubs for infantry, artillery, or engineer regiments, and two for the other corps.

Retreat-room.

6th. A retreat-room with buckets.

Visit room and linen stores.

7th. A visit-room serving for lodging to the non-commissioned officer attached to the infirmary, and for depôt of dressing linen, with a cabinet or presses for the effects of clothing, body linen, infirmary linen, and utensils.

Cooking utensils, &c.

All the utensils for cooking are furnished by the corps of the engineers; the baths by the service of the hospitals.

Regimental Powder and Ammunition Magazine and Laboratory.

Ammunition magazine to be isolated.

The regimental ammunition magazines are generally established in one of the angles formed by the enclosure wall of the yard of the barracks. They are constructed in masonry vaulted over. If these magazines are placed along the road, or near private property, they should be isolated by a little open passage of the width of about 40 inches. The magazine should be capacious enough to contain—

Capacity of magazines.

	Barrels of Powder.
For an infantry regiment - -	36
For two battalions - -	25
For one battalion - -	11
For one cavalry regiment -	2

Cartridges.

When there is no better convenience the cartridges may be manufactured under a shed open at the sides, but well roofed.

Musketry or Shooting Instruction.

Musketry. Shooting practice ground.

Every garrison must have a practice ground as near as possible to the barracks.

It must be about 350 yards long and 16 yards wide. Two masking walls raised, one at 5½ and the other 16½ yards from the firing place, and pierced with holes, stop the balls, which on deviating would go out of the shooting ground.

Ammunition, target, &c. &c.

The ammunition and all the wear and tear are paid from the fund of the corps; but the targets, their repairs, utensils, &c. remain to be paid by the corps of the engineers, who are charged with the necessary repairs before every change of garrison.

Musketry, Normal, and Secondary Schools.

Normal schools of musketry.

Besides the regimental shooting schools there should be a normal general school and a secondary school to train the instructors of musketry.

Divisional and Regimental Gymnasiums.

Garrison gymnasiums.

All the garrisons of any importance must have a gymnasium, and the expense thereof is to be charged to a special fund raised by the War Minister. The engineers, at the request of the chiefs of the corps, present an estimate of the works that are necessary, and on their being approved by the minister, the expense is paid by the *intendant militaire*.

For divisionary gymnasiums the chiefs of divisions make the applications, and the *intendants* approve them.

The engineers, in making their estimates, must conform to the existing regulations.

Swimming Schools.

Swimming schools.

Although the engineers have nothing to do with the schools for swimming, still, when requested by the chiefs of corps, they are obliged to direct the construction of the required fixed or floating bridges, and if in their magazines they have wood that can be usefully appropriated to such constructions, they shall put it at the disposal of the corps, but to be returned into the stores, if possible, at a later period.

Stables.

Double stables.

In double stables the horses should in preference be placed head to head, and the stable should have 13 yards of width.

If placed back to back it can have only 11 yards. Double stables, having only about 9 yards width, can also be occupied, provided each horse is allotted a space of about 24 cubic yards.

Single stables.

Single stables must have about 6½ yards width. The space allowed for each horse must be about 55 or 58 inches at least.

Mangers and partitions.

The mangers must be divided into individual compartments, and if not too expensive they should be made in hard stone or cast-iron; otherwise they can be in wood with the border covered with an iron sheet fixed upon it, and divided by partitions at 55 inches from one another.

Chains.

The horses shall be attached with a chain ending in a ring sliding on a vertical rod fixed to the manger.

Partitions.

Each horse must be separated by a poplar partition, 96 by 18 inches, hung with one end to the manger and with the other to the ceiling by means of wire chains.

Paving.

The stables must be paved with hard stone, or at least that part under the hind legs; but the whole of the stable must be paved with some material impermeable to humidity.

Exterior walls of stables to have rings, &c.

The external walls of the stables must have a series of rings fixed in stone dice at the distance of 58 inches from one another.

Footpath round stables.

There must be a paved or macadamised footpath of about 9 yards wide on all sides.

Stable utensils.

The service of the engineers must furnish the stables with the following utensils:—

Hand-barrows, 25 per regiment, viz.—

For 5 squadrons at the rate of 4 each -	20
For the young horses separated from the squadrons -	2
For the infirmary - - - -	2
For the staff horses - - - -	1

One horse pond, or trough for every 20 horses, 80 by 30 inches, containing 100 gallons.

Pails, per squadron - - - - 8
Buckets, ditto - - - - 2
Trays, ditto - - - - - 2
These trays are not necessary when the mangers are in the form of a basin.
Oat chests, per squadron - - - 1
These must be 40 by 32 inches, and 48 inches in depth. The front side must be made to open, falling down on hinges. These cases must have a padlock.
Oat vans, per squadron - - - 2
Oat measures, ditto - - - - 2
Straw cutters as many as wanted.

The corps must provide from their own fund the small baskets necessary to remove the horse-dung, and also folding beds for the stable guards.

Horse Infirmary.

The horse infirmary must contain 25 places, viz., two stables for non-contagious diseases, with 10 places in one and five in the other; two stables with 10 places, viz., 5 in each, for contagious diseases. The entrance to these stables should be if possible on the south or east side.

Near these infirmaries ought to be the quarters of the veterinary surgeon, his assistant, and that of the *maréchal de logis* in charge of the infirmary.

A forge with a shed sufficiently large to cast and operate on a horse.

A place for the use of the veterinary surgeon for the preparation and preservation of the medicines.

A room for the disinfection of the articles that served for the horses affected by contagious diseases.

It is necessary to have a separate forge and shed for shoeing horses, independent of that for veterinary operations.

The engineers shall furnish the forge with an anvil and its block, a beaked anvil, the bellows with its chain, a basin for the water necessary to give the temper; the remaining articles shall be provided by the corps. The weight of the anvil is fixed at 160 lbs., that of the beaked anvil (*bigorne*) at 100 lbs.

The adoption of the system of cold shoeing makes it necessary to have near the forge some place to keep horse-shoes.

Saddles, &c.

Harness is to be kept in the interior of the stables in the chamfering of the windows.

When there is no sufficient place to keep the harness within the stables, it must be kept in an adjoining room or shed.

Sheds for Carts to convey the Forage for the Corps.

Each cavalry barrack must contain a shed to receive the forage carts of the regiments. Every regiment shall have two of these carts, containing each 100 rations. They are to be maintained by each corps, but handed over to the corps of the engineers on every change of garrison, as well as the driving harness.

Other Sheds.

Other sheds must be made to receive the carriages of the artillery and of the transport corps, placed as near as possible to their respective corps in the most convenient position.

Forage Magazines.

Each squadron magazine ought to contain 600 rations, forming 82 cubic yards, four days' rations, and the same for the artillery and other corps.

School of Veterinary Medicine.

A school of veterinary medicine for every cavalry barrack is furnished by the Minister of War, with horse skeletons and 25 pair of jaws, and all the other objects necessary. The corps in occupation is responsible for the articles belonging to the school. If no courses are given, the keeper and the corps of the engineers have that responsibility.

Riding School.

Barracks containing more than two squadrons ought to have a riding school. If two regiments are in the same town, one riding school may do for both. The dimensions are fixed at 67 yards by 24. Riding school and accessories.

The furniture, consisting of hurdles, pillars, chandeliers, heads, watering cans, mattocks, shovels, rakes, are entrusted to the corps in occupation, and when not occupied, to the engineers. These must furnish also wooden horses, and bars for the vaulting exercises.

Dunghills.

Dunghills must be formed on the north of the quarters, and never placed against the walls, or near the doors of the stables. Must be removed at least once every eight days. Dunghills.

The space allowed for the dung is $5\frac{1}{2}$ cubic yards per horse, per eight days.

Slop-buckets.

The engineers must furnish two iron-hooped slop-buckets for every barrack floor, and in a sufficient number for the infirmaries and places of punishment. These must be emptied twice a day, and disinfected with detergent substances. They should be either covered with lead, varnished, or tarred inside. Slop-buckets.

Stores.

The providing of stoves in the barracks is done by the engineers, as well as their setting up and taking down. Stoves and fuel.

Each company of infantry has a right to one ration of fuel.

Each squadron of cavalry, or special corps, on war footing, has a right to two rations.

Each ration is reckoned to suffice for three stoves.

The small staff (*petit état major*) receives three rations, that are divided as follows:—

	Stoves.
Adjutant non-commissioned officers - -	3
Bandmaster and musicians - -	1
Drum major, corporal, and drummers -	1
Workshops - - - - - -	3
Infirmary - - - - -	1
	9

Sentry Boxes.

Sentry boxes for military service are furnished by the engineers, those for civil service by the civil authorities.

Letter boxes are placed near the police guard of the barracks, and the key is kept by the *vaguemestre*.

Standards.

Standards or banners on military buildings are furnished by the engineers. Colours on buildings.

Stretchers.

Stretchers, for the transport of the sick, are furnished by the engineers. Stretchers.

Drinking Water.

When the barracks are distant more than 550 yards from potable water, the engineers must provide casks with lids, padlocks, and taps, in the barracks, as well as carts and barrels, for the soldiers to fetch their water, when this mode is practicable. When this mode is not practicable, the water must be supplied by contract to the barracks. Potable water.

Troughs or Horse-ponds.

The horses, when they cannot be taken to running water, shall be supplied with drinking water in troughs, each 22 yards long, for each squadron. Horse-ponds.

Wells.

The pumps, pulleys, ropes, or chains, necessary for wells, are supplied by the engineers. Wells.

Fire Engines.

Fire-engines, magazine, and accessories. The engineers must supply every barrack with a fire engine. A special magazine and guard must be reserved for the fire engine, with 100 buckets, and all necessary accessories.

Fire-engine drill. The soldiers must be trained to the use of the fire engine, and all the manœuvres in case of fire, under the direction of the engineers.

Utensils for cleaning the Barracks.

Cleaning utensils. Brooms, baskets, &c., &c., &c., for the internal service of the barracks, kitchens, &c., &c., are to be supplied by the corps in occupation; shovels, barrows, &c., &c., for the maintenance of the external grounds, courtyards, &c., &c., are supplied by the engineers, and delivered to the charge of the barrack-masters.

White-washing. The barracks must be whitewashed at least every three years, but also whenever it is thought necessary.

Defacing walls and other damages chargeable to the soldiers. Defacing the walls with inscriptions, or otherwise, will be charged as damages to the soldiers, for the expense incurred in whitewashing the walls of the barracks.

Police rooms, prisons, cells, &c., must be whitewashed once every year.

Stables and whitewashing. The stables, mangers, &c., &c., must be washed every six months, by the engineers.

Disinfection of the Stables.

Stables disinfecting. Whenever a stable is infected with horse-glanders it must be cleaned, and scrubbed with a solution of chloride of lime, in the proportion of $7\frac{1}{2}$ drachms in a bottle of water. It must then be washed with abundance of water, and the paving chiselled, if necessary.

Lighting of Military Buildings.

Lighting of buildings. The lighting of the interior of the barracks is chargeable to the corps in occupation, that of the exterior, forts, prisons, guard-rooms, &c., is provided by the engineers.

Lights in Stables.

Stable-lights. Lights are not kept in the stable, except one lantern all night in a secluded place and the lights that are necessary in winter time to give the oats to the horses.

Drill Grounds.

Drill grounds. Fields for drill must be provided either by the civil authority or by private contract, when no military ground is attached to the barracks. The size suitable for drill ground is, for a regiment of 3 battalions, 430 yards by 430. For 2 battalions, 325 by 270 yards. For a battalion, 215 by 110 yards.

For cavalry corps, in defect of military ground, the troops may be exercised in the fields when the crops are removed. It is, however, desirable that a convenient ground not further than two miles from the barracks, of suitable extent for the drills should be provided.

Small Polygone for the Artillery.

Polygone for artillery. A polygone is chosen as near the barracks as possible for the instruction of the artillery.

Depôts of Remount.

Remount. The horses bought for the remount are taken care of, till they are delivered to the corps, by men and officers detached from the various corps for that service, in number generally one half of the horses forming the effective of the depôt.

Their lodging and all their wants are supplied in the same way as described for the embodied cavalry.

Lodgings for General Officers, or Officers of Detachments, and Military Employés.

Hiring of officers' lodgings. When military buildings for the accommodation of the officers having a right to be lodged do not exist, convenient lodgings must be hired for them. In the agreements for these lodgings care must be taken that no charge for repairs or keeping be made to the State. Local repairs must be paid for by the officers themselves, from the indemnity for furniture. After having provided for the lodgings of the general officers, &c., if any further accommodation is left for disposal, it may be applied for the location of other officers without troops, or in preference for chief officers of the artillery or of the engineers.

Repairs of lodgings chargeable to officers.

Generals of Division.

General of division's quarters. Generals of division commanding a territorial division are to receive a separate and whole house, where nobody else but those attached to their service are lodged. This house must contain a guard-room for 10 men, a porter's lodge, staff offices, state and private apartments, stabling for 6 horses, coach-house, and every convenience for a large establishment. A general of division's lodgings, when simply commanding troops, shall consist of 5 rooms, one of which for his secretary, a kitchen, 3 servants' rooms, and stabling for his horses.

Lodgings for Brigade Generals.

Brigade-general's lodgings. A brigade general's lodging shall be a little smaller than that described for a general of division, with coach-house and stabling for six horses. When simply in command of active troops, it shall consist of 4 rooms, one of which for his secretary, 1 kitchen, 3 servants' rooms, and sufficient stabling.

Lodgings for detached Officers of all arms.

Superior officers' lodgings. The lodgings of superior officers are regulated according to their rank, as stated in chap. 2, with the following exceptions. The lieutenants of the engineers corps, the lieutenant-adjutants, and the secretaries shall be lodged as captains.

Officers in place service. Colonels, lieutenant-colonels, the engineer captains, lieutenants employed in the place service, the artillery officers in the service of the place, the chiefs of the staff, and the place adjutants, shall have besides their regulated lodgings a clear room without bed.

Aides-de-camps. The *aides-de-camps* shall receive, besides their lodgings, accommodation also for their horses.

Engineers. The engineers shall receive accommodation for their offices, with furniture in the military buildings, or an indemnity in money from 5*s.* to 10*s.*

Commandants of the place, Adjutants, &c.

Commandant of the place. Archives keepers. The commandant of the place must be lodged, as well as the officers in charge of the archives, in one of the buildings of the state, on the *place d'armes* near the troops and their *rendezvous*.

All the other officers attached to the service of the place shall be lodged in the vicinity of the place of their special service.

Officers of the Military Administration.

Administration officers. The officers of the administration attached to the service of the provisions, encampments, hospitals, &c., &c., are to be lodged as military officers, in the following manner, viz., the principal officers as *chefs de bataillon*, accountants as captains, and adjutants as lieutenants.

Medical Officers.

Medical officers. The medical officers should be lodged in hospital buildings according to the regulations for their respective ranks.

Guards of the Engineer Corps and Keepers.

Guards of the engineer corps and keepers. The engineers' guards have a right to a separate lodging in the military buildings; this should consist of two rooms without furniture. The lodging indemnity fixed for these *employés* is regulated at 7*l.* 4*s.*, that for lieutenants and ensigns at 9*l.* 12*s.* The keeper's lodgings are to be near the entrance, and consist of two rooms.

Furniture for the Lodgings of the General Officers, Detached Officers, &c.

General officers' furniture. The furniture of the private apartments of the general officers is at their own charge. Nevertheless

the furniture of the state rooms in the lodgings of generals commanding territorial military divisions, generals commanding military schools, and brigade generals in special commands, is provided from the estimates of the War Department.

A special ordinance is necessary for granting any special lodgment.

Except the lodgings assigned to the officers and functionaries, no lodging can be assigned to any one without a special ordinance.

A statement of the lodgings granted in the buildings dependant from the War Department must be furnished with the accounts to the minister. This statement is not detailed, but indicates the functions of those that occupy those lodgings.

Chapter 3d.

Delivery of Military Buildings to the Troops. Internal Police of the same, and their Administration when occupied. Evacuation of the same.

Delivery of Military Buildings to the Troops.

The *officier de easernement* preceding each corps of troops in mareh, presents himself as soon as he arrives to the commandant of the place and the *sous-intendant*, who having verified his orders take the necessary measures for keeping the barracks ready for the arriving troops. An engineer guard accompanies the *sous-intendant militaire* and the *officier de casernement* in the visit they make to every room, noting upon the inventory the actual state of all the objects, fixtures, or furniture contained in it. This done the officer receives the keys at once. A copy of the inventory is then given to the guard of the engineers, with the signatures of the *officier de casernement*, of the major, and the *sous-intendant.*

If the *officier de casernement* finds fault with either the arrangement or the state of the barracks, he adds his observations above his signature, under the description and inventory, and the guard of the engineers is called to decide on the subject.

If the officer objects to the barracks in general the *sous intendant militaire* will take the objection into consideration, and if he decides that the objection is not sufficiently grounded, the officer shall conform to his decision, reserving the right to appeal to the superior authority.

Immediately after the signature of the descriptive inventory showing the receipt of the barracks, the occupying corps becomes responsible for all future damages, verified either in the building or its contents, except those occasioned per *force majeure*, natural decay, or defect of construction, to be verified by the *sous-intendant militaire* and the chief of the engineers.

The *officier de casernement* causes the *fouriers* to make out a statement of all the contents in the rooms occupied by their companies. These statements are certified by the captains, and are hung up in the respective chambers.

On every quarter day the *officier de casernement* makes a general visit in presence of the officers and soldiers, and puts down to the account of those whose due it is, to make the necessary repairs and restoration of the objects either damaged or missing.

The same formalities must be gone through in case of changes in the lodgings of the same place.

Buildings occupied.

The commandants of the place give all the orders regarding the internal arrangements of these buildings when occupied by the troops. The chiefs of the corps cannot change anything in the arrangements made with regard to any locality. It is expressly forbidden to have drilling or other exercises, as fencings, &c., done in the rooms and corridors, or in any other place than in those destined to those purposes.

None but military men in active service, or forming part of a military administration, can occupy, under any pretext whatever, a place in any of the military buildings.

None can be admitted into the military buildings unless a military man, or furnished with a permission from the commandant of the place, the military *intendant*, or the officer of the engineers. — None admitted in military buildings, unless in military service, or furnished with special permission, or legal authorizing powers.

Admittance cannot be refused to the agents of the authorities when requested, with the forms exacted by the law in legal form.

The *sous-intendant militaire* and the officer of the engineers must see that no changes take place in the distribution of the quarters, and in case of contravention they remonstrate first with the commandant of the corps, then with commandant of the place, and, if necessary, they inform the war minister through their respective chiefs. — No changes permitted in the distribution of quarters.

Whenever a reduction of the effective in barracks takes place, from whatever cause, the *officier de casernement* shall deliver immediately to the engineer guard or the barrack-keeper the keys of the rooms left vacant. — On the force being reduced, the empty rooms must be returned to the administration.

The barrack-keeper becomes then responsible for the cleanliness of the rooms, and the objects contained in them, excepting the beds, which must be immediately transferred into the stores. — Barrack-keeper responsible for the empty rooms and their furniture, except the beds.

The barrack-keeper of each building must deliver at the end of every week a return of all the changes in the occupation of the lodgments, according to Form No. 5. — Monthly barrack-keeper's return of barrack's movements.

The engineer guard will also keep for each lodging a separate control register. He will also make out a return to present to the chief of the engineers, according to Form No. 6. — Engineer guard's controlling register.

Cleanliness.

The corps must preserve the cleanliness of the interior and exterior staircases, corridors, courtyards, and front of the locality they occupy. — Cleanliness.

The *officier de casernement* must see that the chimneys are swept as often as necessary.

An officer per company of all the corps of the garrison must inspect the barracks every day in the morning, an hour after the troops have got up, and in the evening at about four o'clock, to ascertain that the greatest cleanliness is maintained. — Officer's inspection of barracks.

Besides the inspecting officer, every day at guard-mounting one or two captains are appointed to make the general inspection of all the barracks and quarters in the place, as well as the stables of the cavalry.

For the accuracy of these inspections the inspecting captain is responsible to the commandant of the place. — Mutual responsibility of inspecting officers.

The company inspecting officers to the garrison inspecting captain, or captains.

The company serjeant-major to the inspecting company officer.

Finally, the chief of the ward to the serjeant-major.

The commandant of the place verifies, or causes the reports of the inspecting officers to be verified, whenever he thinks fit. — Verification of inspecting officer's report by Commandant of place.

If he finds that some defect of cleanliness arises from want of utensils or repairs the chief of the engineers or the *sous-intendant militaire* are informed of it, and if it involve an extraordinary expense, the report is sent to the Minister of War through the chief of the engineers, and his decision is acted upon. — Cleaning utensils.

Evacuation of Barracks.

As soon as the order of departure of a corps or detachment reaches the commandant of the place, the chief of the engineers and the *sous-intendant militaire* are informed by him that they may take the necessary steps for the delivery of the buildings. — Departure of corps.

An inspection is made by the *sous-intendant militaire*, the engineer guard, and the *officier de casernement*, to ascertain the differences that may exist in the state of the places. These differences, as well as the consign of the places on both the inventory statements that were made up at the time of the occupation. — Inspection on departure.

The verification of damages and repairs being done regularly every three months, there will be only those which have occurred since the last verification to account for. — Damages and repairs.

Damages and Payment.

Damages, and payment thereof, stated and signed.

The engineer's guard ascertains the damages, the *sous-intendant militaire* makes out a statement, and the *officier de casernement* signs it.

Detailed description of works to be done.

A detailed description of the works to be done is added by the engineer officer to the statement, with an approximate estimate of the outlay.

If the *officier de casernement* refuses to acknowledge the damages, the works of repairs are proceeded with nevertheless.

Should the *officier de casernement* refuse to sign the statement, the *sous-intendant militaire* proceeds on, and the document is not the less executory against the corps evacuating.

Orders for repairs are directly transmitted to the contractors.

The orders for the repairs are immediately transmitted to the contractors for the military works. If the season permits, they are immediately executed, otherwise as soon as possible, on the terms of the contract approved by the minister.

Account of the works done, certified and paid, and charged to the evacuating corps.

As soon as the works are done, the engineer officer certifies to them below the statement handed to the contractor, and joins to it a certified copy of the account of the works done. The contractor presents these documents to the *sous-intendant militaire*, who causes the quartermaster-general or the paymaster-general to pay for them, putting the amount to the debit of the corps, to be stopped from the issue of the next pay.

Stoppage of the pay of the corps, to the amount of one-fifth, to pay for damages.

These stoppages can never exceed one-fifth of the whole pay at each time.

Six months time allowed for claiming against barrack damages charges.

Six months time are allowed to the corps for objections against such stoppages.

No claim is entertained after such time has elapsed.

A corps leaving without acknowledging damages, the civil and military authorities proceed *ex officio* to the verification for them.

If a corps leaves without the damages being ascertained and accounted for, the commandant of the place proceeds officially himself, or deputes an officer, or in his absence the mayor, or other member of the civil authority, is invited by the *sous-intendant militaire* to be present and represent the absent corps.

In this case the local paymaster applies to the paymaster of the place where the corps resides, to cause the stoppage to be made.

Objects for Transmission to the succeeding Garrison.

Objects transmitted to a succeeding garrison.

The objects, such as forage carts, materials for the school of musketry, &c., &c., which the corps buy and preserve on account of the fund of the corps, but must not take away on changing garrison, are left in charge with the guard of the engineers appointed by his chief, to whom a duplicate inventory is also given. He, without entering them into his books of the material of his service, receives them in deposit, to remit them and account for them to the corps that succeeds, handing them one of the inventories, and getting on the other the discharge of his consignment.

If on the 31st of December, which is the time for the production of the inventories of the materials, the barracks are still empty, the engineer will forward to the minister through his chiefs a certified duplicate of the same statement.

Cleaning barracks before delivering them.

On leaving the barracks, however hurriedly, or for whatever cause it may be, the corps must deliver all the rooms, corridors, staircases, stables, &c., in a perfect state of cleanliness, fit to receive immediataly the corps that succeeds.

The commandant of the corps is responsible for that order to be executed.

In case of hurry an officer shall be left behind to see the barracks cleaned.

In case of a very precipitate departure, the officer in command shall leave behind an officer with a detachment, that shall proceed immediately to brush and clean every part of the buildings, stables, &c., which having been done they will rejoin the corps. All the officers are obliged to deliver their quarters perfectly clean for their successors.

Works of cleanliness if neglected are ordered & charged as barrack damages.

Any corps failing in the fulfilment of this duty shall have to pay for the cleaning of the barracks which shall be done immediately, by workmen hired by the engineer guard and the barrack-keeper, on the authority of the *sous-intendant militaire*, who will afterwards recover the cost as for the barrack damages.

The corps receives a discharge for the barracks, of which the keys are returned to the engineer guard.

As soon as the *sous-intendant militaire* receives information from the engineer guard of the delivery of the keys, he delivers to the corps a certificate exonerating them from any further responsibility for the lodgings they occupied, except as to the repairs to be done for damages already ascertained.

No part of the evacuated barracks can on any account be retained by any one of the leaving corps.

No part whatever of the barracks evacuated can be retained for any time by any individual of the corps leaving, and every single key must be immediately delivered by the *officier de casernement*.

Chapter 4th.

Hiring of Lodgings.

Hiring of lodgings.

When the military buildings are found to be insufficient for the service, the *sous-intendants militaires* shall treat with private proprietors for the hiring of suitable places.

Civil authority applied to in case of difficulty in obtaining lodgings.

When they cannot agree amicably with the proprietors, they must apply to the civil authorities, who shall interfere to procure them.

Arbitration to fix the rent of lodgings.

The rent, in case of disagreement, shall be fixed by judicial arbitration.

Lodgings to be occupied for urgency, and rent established afterwards.

In case of urgency, the lodgings shall be occupied forthwith, and the rent shall be subsequently established and paid.

Authority for occupying lodgings.

No building can be hired without the authority of the Minister of War on an application of the *intendant militaire*, or a direct order from the *intendant* for the service of administration in case of urgency.

Necessity of hiring lodgings to be shown in the application, with all particulars relating to them.

When it is a question of quarters for the troops, the necessity for hiring these must be shown in a report (*procès verbal*) made out by the *sous-intendant* with the chief of the engineers and the commandant of the place, where there is one. It must contain a description of the building, its conveniences, the price and conditions of the hiring. The *intendant* of the division adds to it his opinion, and presents it to the minister.

Intendant to report upon.

Copy of the report to be sent to the director of the fortifications.

A copy of that report should be sent to the director of the fortifications, that he may make his observations if there is occasion for them.

The special regulations of the different services of the administration determine the cases when the state is to take charge of the letting of the buildings intended for carrying out these services.

Agreements drawn out and signed.

For every kind of letting the agreements are drawn out by the *sous-intendant* with the officers of the engineers, and entered into between the war administration and the proprietor or his legal representative.

They must be signed by the person that lets, the *sous-intendant* and the officer of the engineers, and viséd by the *intendant*.

The agreements must express :

Terms of agreements.

1st. The date of the report of the suitableness of the premises.

2nd. The approving decision of the minister.

3rd. The kind, number, and extension of the premises.

4th. The service for which the premises are hired, and the particular use for which the premises are intended.

5th. The duration of the contract.

6th. The rent, the periods of the payments, and all the other conditions.

They must mention the exemption from all the taxes, from which are exempted all the buildings occupied by the military or for which the *employés* shall pay as their *lodgings*. The agreements shall be as in Form No. 7.

The agreements are made in three originals :

Duplicates and copies of agreements.

One that the *intendant* transmits to the minister ; one for the proprietor ; and a third for the *sous-intendant militaire*, who causes two copies to be made, one for the divisional *intendant* and one for the chief of the engineers who was present at the stipulation, and put his signature to it.

If the building is required for the administration, a third copy is delivered to the chief of the office. If contractors have to provide the premises, they shall stipulate in their own names.

Contracts of Hiring registered.

The agreements are registered *gratis* whenever the state is the party that hires, and also for the military service.

Taking Possession.

Possession is taken by the fact of the reports of the localities being made out by the guards of the engineers and the proprietors, and acknowledged and signed by the guards of the engineers or the barrack-keepers, if the buildings are intended for the lodging of troops, or by the *gerants militaires* or the *comptables* (accountants), if intended for administration offices. The reports are submitted for their approbation to the *sous-intendant militaire* and to the chief of the engineers.

These reports are also made out in three copies, to be delivered one to the proprietor, one to the chief of the engineers, and one to be deposited in the archives of the *sous-intendant militaire*, who causes a duplicate to be handed either to the guard of the engineers, the barrack-keeper, or the accountant in the service, as the case requires.

Payment of Rents.

The payment of the rents for military lodgings are authorized by the *intendants*, but are accounted for in the general accounts in the credits open for the service of the engineers.

Fulfilment of the Agreements.

The military *intendants* are charged to see that the terms of the agreements are fulfilled. The fulfilment, the annulling, when there is occasion for it, and the renewal of the agreements, are regulated according to the common law of the land.

Return of the Buildings to the Proprietors.

The return of the buildings to the owner is done on the statement of the premises. The discharge of the guard of the engineers and of the accountant, are effected by a declaration at the foot of that document, written by the owner, stating that the premises were delivered to him, and he has no claim to make for them.

Repairs of Buildings for Troops.

In case of repairs being necessary to the buildings for lodgment of troops, the chief of the engineers will proceed to their execution, if they must be to the charge of the state; if they are chargeable to the owner of the premises he shall have them executed under the inspection of the chief of the engineers, who will report to the Minister-of-War if they are not properly executed.

For the repair of buildings for the service of the administration, the regulations are given hereafter at Chapter 6th.

Substitutions for Officers in case of Absence.

In drawing an agreement the commandant or the major of the place can act for the absent *sous-intendant*, or, in their absence, the civil authorities of the place; the officers of the engineers also can be replaced by the guards, or in default, by a civil engineer or an *expert* appointed by the civil authority.

Chapter 5th.

The Minister-of-War only gives the orders for the construction of military buildings. The chiefs of the engineers present their projects and are charged with the execution.

All the works of repairs or appropriation that can be foreseen, ought to be proposed in the annual reports, containing an article also for the current repairs.

The chiefs of the corps can address their demands for repairs to the *sous-intendant militaire*, who transmits them, with his opinion, to the chief of the engineers. Small repairs can be executed at once on the orders of the chief of the engineers from the yearly fund for repairs of preservation.

For all other repairs, either for preservation or for the convenience of the service, the chief of the engineers takes his orders from the director.

If the director sees no absolute necessity for the immediate execution of the works, he causes a report to be made out by the *sous-intendant militaire* to ascertain the object of the claim and its motives, as well as the remarks of the chief of the engineers, and if it is for hospital buildings, those of the chief medical officer, as well as of the *officier d'administration comptable*. These he transmits to the minister with an estimate of the probable expense, and, only when asked for, a detailed plan also.

If not urgent they must be ordered by the minister in the regular way.

When the chief of the engineers acknowledges the absolute urgency of the requested repairs, no report is made out. The director considers the degree of urgency, and when necessary gives the orders for their immediate execution, giving afterwards an account of them to the minister, with a demand for the required funds.

Engineer's report of urgency.

Works demanded by the Inspector-General of Arms.

When the inspector-general of arms makes his inspection of the barracks, the engineer officer, or in his stead the officer charged with the service of engineer, must accompany him. After having thoroughly inspected all the places occupied by the troops, and received all the applications for repairs, alterations, or constructions wanted to complete or improve the lodgments of the soldiers or officers, the inspector-general will direct those works to be executed which fall under the category of current repairs. These works shall be executed at once, as far as the funds at disposal will allow.

Current repair. Works demanded by inspector-general of arms.

As for other improvements the inspector-general, after having consulted with the chief of the engineers, and taken notice of all the former applications and decisions that may have been taken on the same subject, will inscribe on the register (that according to the regulations is kept in every place) the remarks and propositions which the required improvements suggest.

Projects and applications for other improvements to be registered.

The register above mentioned shall be similar to Form No. 8.

The directors shall take care to hand to the inspector-generals of the engineers all the complete *tableaux* of the observations made since the last inspection of the service of each place. (Form No. 9.)

The directors hand over to the engineers extracts of the remarks made at the yearly inspections.

The directors shall, at the end of each year, address to the minister a report containing only the remarks and propositions presented in the same year, after the passage of the inspector-generals of the engineers, or referring to places not yet inspected.

Directors' reports to the minister.

All the works acknowledged at the time of the inspection to be necessary, and which, on account of their importance, cannot receive an immediate execution, must be specially reported by the officer of the engineers, with an estimate of the expense, and be regularly passed in the ordinary way.

All the works of some importance must be regularly reported, estimated, and submitted to the minister in the regular way.

Applications made by the Intendants Militaires.

The *intendant militaire* can invite the engineer officer, or acting engineer, to accompany him in his inspection, and examine with him the assessment of the lodgings, that no cause of complaint may be given.

Intendant militaire and officer of the engineers inspect and receive claims.

If the premises assigned to the infirmaries or the corps stores are not suited, or the tables, shelves, rollers, &c., &c., are not complete, he inquires into the causes of it, makes out a report, and if the expense does not exceed 8*l*., and can be charged on the current repairs fund, he directs the immediate supply of the necessaries. For any expense exceeding that amount, and requiring a special authority from the minister, the *intendant militaire* inscribes his remarks on the register of the inspections, and reports to the minister.

Any just claim for furniture, not exceeding the value of 8*l*., shall be complied with and charged on the current repair fund.

For any expense exceeding 8*l*. authority from the minister is necessary.

Chapter 6th.

Service of the Military Provisions.

Provisions.

The service of provisions embraces,—

1st. Victuals consisting of - { Bread victuals. Campaign ditto. Liquids.

2nd. Forages.

3rd. Siege provisions.

Stores.

This service is carried on either by direct agents, or by contractors per rations, according to circumstances, the nature of the service, and the localities.

Stores are established wherever provisions must be kept constantly ready for consumption.

Localities.

The minister, or the *sous-intendants militaires*, determine the annexes, staple places, and cantonments comprised in the district of each store.

Service carried on by direct Agents.

Provision agents. Stores.

When this service is carried on by direct agents the state provides the premises necessary for that service, either in state or hired buildings.

Hired buildings.

In the latter case the agreements are made in the name of the war *administration* as described at chap. 4th.

Hired Buildings.

Fittings and repairs.

The fittings and repairs are executed by the corps of the engineers, if the premises belong to the state; or under the care of the accountants, if the premises are hired.

Damages.

The accountants are responsible for all expenses occasioned from damages done to the buildings, proceeding from negligence or using them for other purposes than those to which they were destined.

Works of fitting, &c. made upon regular estimates, authorities, &c.

The execution of any work to be done in hired buildings must be always preceded by an estimate verified by the officers of the engineers or the civil architects, or in some instances by the chief or assistant army contractors, and finally approved by the minister.

Inspection of the works when made.

The works when made are inspected by the military or civil engineers, who verify and certify to the expense occasioned.

Payment of works.

The accountants of the services or the chief contractors disburse the expenses made for constructions or repairs in the buildings, and so become direct creditors of the state for the amount, which is authorized and discharged according to the regulations for the expenses of the War Department.

Service carried on by Contractors.

Contractor's stores.

The contractors for victuals and forage are in principle obliged to provide at their own expense the premises necessary to carry on their service. Nevertheless they can be put in possession of the buildings, grounds, and furniture, that were precedently employed in the service of the state, and they can have the enjoyment of them gratuitously under the following conditions.

Report on state of premises.

The chief of the engineers shall cause a report to be made of the premises given to the contractors, and it shall be verified in the presence of the *sous-intendant militaire*.

Repairs.

Of that report, signed by the *sous-intendant*, the chief of the engineers, and the contractors, two copies, one for the contractor and the other for the minister, are made out, and on the last the contractor shall sign his engagement to bear all the expenses of keeping the place in the state of repair in which he receives it, except the deteriorations arising from age or defect of construction.

The necessity for works of repair will be in all cases ascertained by the chief of the engineers and the *sous-intendant* in a report where the expenditure will be charged to the proper party.

No repairs or alterations permitted to the contractors without authority.

The works must be executed under the direction of the engineers. It is formally forbidden to the contractor to execute them or introduce the slightest modification in the state of the premises.

Expenditure of repairs to be charged to the contractor, and deducted from the first order of payment to him.

The expenditure for the works chargeable to the contractor will be established as per barrack regulations, retained on the first order for payment to him, and the amount handed over to the contractor for the engineer's works of the place.

The minister judges in case of disputes.

All disputes shall be judged by the minister.

Buildings insured.

The buildings given up to the contractor shall be insured at his cost in the name of the state by the *sous-intendant militaire*, who shall retain the policy of insurance.

Formalities of return of premises.

At the expiration of the contract the buildings shall be returned with the same formalities as on the delivery.

Government's right to re-enter in possession of premises lent to contractors.

In case unforeseen circumstances should render it necessary for the state to occupy the premises lent to the contractor, or the imminent necessity for repairs should render it desirable, the contractor will be obliged to evacuate the premises partially or completely, as the case may require. In either case a reasonable delay fixed by the minister shall be allowed to the contractor to give him the opportunity of settling himself elsewhere.

Reasonable delay granted for the evacuation.

Indemnities.

The indemnities that may be due to the contractor shall be fixed by the minister on the proposition of the *intendant militaire*, and the colonel director of the fortifications.

Hiring of additional accommodation by contractors.

If the buildings lent by the state to the contractors prove insufficient for the service, they shall hire some others in addition in their own name, but conforming to the regulations on subsistences and barracks.

Agreements to be worded according to the regulations.

The agreements must be worded so that they cannot be annulled without the approbation of the *intendant*, and leaving liberty to the state to continue them in case the contractors should cease their service. A copy of the agreement is delivered to the *intendant*.

Administration's right of inspecting contractor's premises.

If the contractor is a proprietor or occupier of the premises, previously to the adjudication, he must be obliged to give up to the administration his right of inspection and superintendence of these premises.

Requisitions for Places for Army Service.

Requisitions and occupation of places necessary for the service of the army.

In time of war, mills, ovens, stores, magazines, sheds, and other places fitted for the service of victualling the army, are by right at the disposal of the *intendants militaires*, on the requisition which they address to the local authorities, and of which the military commandants are obliged to ensure the execution, by placing immediately in these places the necessary safeguards.

Verification of Weights, Measures, and Scales.

Weights, measures, and scales.

In the interior the verification of weights, measures, and scales is done by the civil officials specially appointed. With an army abroad it is done by the staff officers on the demand of the *intendants* or *sous-intendants militaires*, who report on them.

Premises necessary for the Victualling Service.

General Dispositions.

Victualling army service premises and necessary conditions of their construction.

The premises attached to the service of provisions must be proportionately spacious, in an healthy locality, and very dry. They must be isolated, if possible, to guard against communicated fires, near to the points of importation, of easy access, with a single entrance to facilitate the supervision of the receipt and issue of the provisions.

The buildings must be solid, and the floorings strong enough to sustain considerable weights of the provisions stored. The doors and windows must be well secured, and so disposed as to insure good ventilation.

Premises for Bread Provisions.

Bread service premises.

The service of the bread provision requires the following convenience:—

1. An office for receiving the provisions, with scales.

2. A bakehouse containing at least two ovens, that the work may never be interrupted in case of repairs.

3. A baker's shop or bread magazine, with an office for the distributions. The bread magazine must be furnished with shelves against the wall or in the centre of the room. The shelves shall be perforated to facilitate the circulation of the air; each board shall be 24 inches wide. The office of distribution must have an opening pierced in a window or a wall, that the distribution may be done without the fatigue parties entering the establishment. A shelter must

be made externally, that the fatigue parties may be defended from the rain.

4. A depôt for the cinders.

5. A wood-house or fuel store, sufficiently distant from the bakehouse to avoid the danger of fire.

6. A well, a fountain, or a cistern, unless the buildings are near a river or a fountain.

7. An office and lodgings for an accountant or at least for a guard.

8. Sufficient store room to contain provisions for the proportion of $\frac{3}{4}$ in wheat and $\frac{1}{4}$ in flour.

9. A magazine where the flour coming from the mill is kept to evaporate.

10. A bolting room, whence the flour descends down into the bakehouse through a linen funnel.

It must be remarked that both the ground floor and the top floor are less suited for the preservation of flour than the middle floors.

11. A depôt for the bran.

12. A depôt for the utensils and a sack house.

13. A cellar.

14. Some pantries to contain, if need be, rice, dry grain, salt, &c.

The magazines must be paved with bricks, well baked and well set in, or preferably boarded at grooves and lingets, and wainscoated to waist height.

All these premises must be with even ceilings.

Premises for Meat Provisions.

Meat service premises.

1. A park or stables divided in different compartments for the different kinds of cattle.

2. A forage magazine.

3. Park guards' lodgings.

4. Slaughter-house near the water, with easy drains.

5. A butcher house, sufficient to contain the quantities necessary for the distributions.

6. A magazine to contain the purtenances.

7. A magazine to dry or salt the hides and skins.

8. A depôt for the utensils.

9. An office and lodgings for the accountant, or at least for a guard.

Premises for Forage.

Forage service premises.

1. Sheds, magasins, or barns, for hay and straw, to remain there the time necessary for being bottled, and to be put in order for the distributions when bottled.

2. Oat stores, well paved or boarded, and wainscoated to waist height. When these are situated on the upper floors, a linen or wood funnel is fixed at the external part to let down the oats.

3. A bran magazine.

4. A depôt for utensils and bags.

5. An office and lodging for the accountant, or at least for a guard.

Siege Provisions.

Siege provisions.

For siege provisions, sufficient and well appropriated premises for the preservation of the various kinds of victuals, divided per branches as above described, must be secured.

Extent and Capacity of the Magazines.

Capacity of stores.

Granted that wheat weighs 165 lbs., and oats 101 lbs., per sack 22 gals. The following calculations must be modified with regard to the weight of the provisions to be stored, and the weights given here as points of comparison.

On a surface of 40 square inches can be placed,—

In wheat in warren, at $2\frac{1}{2}$ inches in height, 827 lbs.

In grains and flour in sacks.
- Upright, containing - - 165 lbs. 827 lbs.
- „ „ - - 220 lbs. 1,100 lbs.
- In piles, on 5 sacks in height, which is the regular way, the capacity of the magazines is of about one quarter less than that above mentioned.
- On six sacks of height, the contents are nearly the same as in sacks upright.

When the storing is only temporary, and the solidity of the floors allows it, the height of the piles can be doubled or trebled, and so the capacity of the magazines increases in proportion.

In oats.
- In warren at 3 inches height, 616 lbs.
- In sacks 56 lbs. less than for grains and flour in any position.

A volume of 40 cubic inches of bottled and not pressed hay can be valued at the weight, 143 lbs. If the hay is stored in piles of $6\frac{1}{2}$ yards or $8\frac{2}{3}$, it can be valued at the average weight of 220 lbs.

It results from the above data that a forage magazine for provisions to last four months, for a regiment of cavalry of 713 horses, that is, for 86,000 rations, composed each of 11 lbs. of hay, 11 lbs. of straw, and 8 lbs. of oats, must have,

In metrical measure :—

1st. For the $\frac{4{,}300\ \textit{quintals}}{946{,}000\ \text{lbs.}}$ of hay a volume of 4,300 *cubic metres.*

2nd. For the $\frac{4{,}300\ \textit{quintals}}{946{,}000\ \text{lbs.}}$ of straw a volume of 5,120 *cubic metres ;*
Or, a total capacity of 9,420 *cubic metres.*

3rd. For the $\frac{3{,}096\ \textit{quintals}}{681{,}120\ \text{lbs.}}$ of oats, with the space necessary to the communications and the working of the granaries, having a total surface of 1,100 *cubic metres.*

These last results are those that have served as the basis for the establishment of type magazines.

Hospital Service Establishments.

Hospital service.

The establishments for the service of the hospitals are,—

The hospitals { permanent. / temporary.
Ambulances.
The magazines { of furniture. / of medicaments.

Permanent Hospitals.

Permanent hospitals.

Permanent hospitals are those that are formed in the interior of the kingdom to be maintained in times both of peace and war.

Temporary Hospitals.

Temporary hospitals.

Temporary hospitals are those extraordinarily formed in case of war or of an assembling of troops.

Ambulances.

Ambulances.

Ambulances are formed near the corps or divisions of the army to follow their movements, and offer the first succour to the wounded or sick.

Permanent Hospitals,—Ordinary, Special, or of Instruction.

Ordinary, special, or instruction hospitals.

Permanent Hospitals are classified as—

1st. Ordinary.

2nd. Special, when destined for only one kind of disease or treatment. Ordinary hospitals. Special hospitals.

3rd. Of instruction, when courses on the different branches of the art of curing are opened in them. Instruction hospitals.

Military men are placed in civil hospitals, in defect of military hospitals.

In defect of military hospitals the sick or wounded are placed in civil hospitals and charged in the accounts of the War Department.

Hospital Reserve Stores.

Hospital reserve stores.

The hospital reserve stores are established at different provincial chief towns, and a central one in the capital.

These shall contain, independent of the material appropriated to each hospital, a reserve for field service, reckoned at one-seventh of the effective of the army, in furniture, provisions, and medicines, &c.

Destination of Places for Hospital Service.

Hospital service premises.

The minister appoints the places required for military hospital service on the report of the *intendant*, supported by the general commanding the division. This report is founded on that made by the *sous-intendant militaire*, with the commandant of the place, and the officer of the engineers, in which the advice of the medical officer in chief and of the *officier d'administration* are recorded.

In urgent cases the *intendants militaires* with the sanction of the generals commanding the divisions select the places for temporary establishments, reporting it immediately to the minister.

All such establishments should be preferably placed in state military buildings.

In defect of state buildings others may be hired, according to the regulations mentioned at Chapter 4. (Hired Buildings.)

The distribution of the lodgings in military hospitals is according to the barrack regulations, both for the invalids and the *personnel* of the service.

With regard to the different places to be assigned to the different kinds of disease and branch of service, the medical officer in chief shall be consulted.

For new buildings the directions hereafter should be followed as far as possible.

Wards.

Internal dispositions of Hospital premises.

The wards should be placed, if possible, in the floors above the ground floor, and disposed in such a manner as to isolate the various kinds of diseases.

Infectious diseases.

Special wards should be assigned for men affected with itch, or gangrene, one or more for convalescents, and one vacant as a reserve.

Penal confinement ward.

A special ward must be set apart for military men under penal confinement, and one for prisoners of war in war times. And, finally, one or more wards for officers or *employés* considered as such.

Measurement of wards.

The wards must have at least 12 or 13 feet elevation, and receive their light from windows opposite to one another, raised from the floor not more than 80 inches.

Disposition of beds in wards.

The disposition of the beds is reckoned according to the length, width, and height of the wards, and with reference to the kinds of disease, so as to give to each invalid with fever or wounded at least 22 cubic yards of air, and 19½ to those affected with itch, syphilis, or who are convalescent. In no case should the distance be less than 26 inches between the beds.

Retreats.

Retreats.

Retreats must be near the wards, but isolated, well ventilated, their doors closing well, and connected with well-constructed sewers.

Dependencies.

Hospital dependencies.

The dependencies of the hospital are—

1st. A *corps de garde* (guard-room).
2nd. Porter's lodge.
3rd. Surgeon's guard-room.
4th. Admission office.
5th. Dressing-room for admitted men.
6th. Store-room, furnished with shelves perforated, for knapsacks and effects of the men.
7th. Dispensary, composed of separate rooms,
For the stores of medicines.
For the laboratory.
For ptisans.
For the dispenser on guard.
8th. The pantry, with separate places for the provisions of food, for the raw meat, and for the depôts of the weighed meat.
9th. A fuel store-room.
10th. The kitchen, where, if possible, should be a tap for continual abundant supply of good water, a washhouse, a fuel depôt, and an office for the cook.
11th. The post for the non-commissioned officer on guard.
12th. A guard-room for the *officier d'administration* on duty.
13th. The post of the *infirmier major* on guard.
14th. A hall for the *infirmiers*.
15th. The furniture stores, with special rooms for the linen; for the woollen effects and utensils there should be shelves perforated, some along the walls, others isolated. There must be also a work-room separated for the repair of the linen.
16th. A store for dirty linen.
17th. Bath-room, with separate closets for the officers, and other conveniences for artificial mineral baths and steam baths.
18th. A wash-house, with close drying rooms and yards, as well as convenience for disinfecting fumigations, a stove-room, &c. &c.
19th. A police room, with a camp bed.
20th. A closet, healthy, well closed, for maniacs or hydrophobic patients.
21st. A dead-room, and a dissecting room contiguous, but out of sight of the wards.
22nd. Lodgings and offices for the accountant, the *officier d'administration*.
23rd. A chapel, a vestry contiguous, and apartments for the chaplain.
24th. A funeral chapel, independent of that destined for divine service.
25th. Yards and gardens for the invalids to walk in.
26th. A botanical garden.
27th. A close gallery for the invalids to walk in, in rainy weather.

Besides the above enumerated dependencies, there must be also,

1st. Separate cellars for liquid provisions, both for drink and the dispensary.
2nd. A place in the granaries for drying and preserving medicinal plants, flowers, and roots.

28th. Lastly, a committee room for periodical meetings of the *sous-intendant*, the chief medical officer, and the accountant *officier d'administration*.

Hospitals of Instruction.

The places required in the hospitals of instructions for schools of medicine and pharmacy are,

1st. An anatomical amphitheatre, with all the necessary accessories for the dissection, preparation, and preservation of the anatomical and pathological specimens.
2nd. A chemical and pharmaceutical laboratory, with its necessary dependencies.
3rd. A hall for lessons and meetings.
4th. A garden for the culture of medicinal plants.
5th. Two small rooms, contiguous, one to the ward of the wounded, and the other to that of the men with fever, for the operations or consultations.
6th. Two special rooms for the convalescents, one for the wounded, and one for men with fever, to give the professors and students the opportunity of remarking the progress of the convalescence, or the cause of a relapse.

Lodging for Persons attached to the Service of the Hospitals.

Whenever the localities permit it the officers attached to the service of the hospitals are lodged in the same building, giving precedence to those whose services are more frequently required, in the following order.

1st. The accountant *officier d'administration*.
2nd. The surgeon in chief.
3rd. Medical officer in chief.
4th. Dispenser in chief.
5th. Chaplain.
6th. Adjutant, first class.
7th. Assistant surgeon.
8th. The *sous-adjutant* charged with the furniture stores.

The five first enumerated shall receive, as far as possible, a suit of several rooms with a kitchen.

Nos. 6 and 7 a bed room and a closet, and the last a single room,

Hospital Stores.

The dependencies of the general hospital stores :
1st. Sufficient store room for provisions.
2nd. Cellars for liquids.
3rd. A laboratory for medicines.
4th. Work-rooms for effects.
5th. Lodging and offices for the accountant officer.
6th. Porter's lodgings.

When the stores are in the same place with the hospital, they are, if possible, established in the buildings dependent from the hospital.

Letting of superfluous Dependencies.

Letting of superfluous dependencies.

If in the dependencies of the stores or of an hospital are grounds recognized by the medical officers and the *sous-intendant militaire* as useless for the service, they can be let, if that can be effected for the public advantage, and with no detriment to the service, as prescribed in the regulations for the fortifications.

Construction, Repairs, Improvements, Alterations, and hiring of Hospital Premises.

The construction, repairs, improvements, alterations, and hiring of premises for hospital service, are regulated as for the barrack service, with the only difference that besides the *sous-intendant militaire* and the officers of the engineers, the chief medical officer intervenes, and the expenses are chargeable to the estimates for the service of the hospitals.

Military Beds.

Military beds service.

The service of the military beds consists in the delivery and maintenance of beds for officers and military *employés*.

Furniture of officers' rooms.

Furniture of military *employés*, adjutant, non-commissioned officer, and veterinary's rooms.

Soldiers' beds.

Infirmary beds.

Infirmerie beds.

Half beds.

Half beds.

Soldiers' hammock beds.

Hammock beds.

Sentry boxes.

Sentry boxes.

Officers' guard room furniture.

Officers' guard room furniture.

Soldiers' guard room furniture.

Soldiers' guard-room furniture.

Officers' iron bedsteads.

Officers' iron bedsteads.

Soldiers' ditto.

Soldiers' bedsteads.

Trestle iron bedsteads.

Trestle iron bedsteads.

Ditto wooden ditto.

Trestle wooden bedsteads.

The contractors for military beds can enjoy the benefit of storing their furniture in military buildings, under the same regulations as the contractors for victuals and forage.

Store convenance lent also to contractors for military beds.

No storage allowed for sentry boxes.

No storage is given to contractors for sentry boxes. Deteriorations verified in the beds and other furniture from the bad state of barracks, hospitals, or stores, or neglect or other undue cause, must be indemnified to the contractor.

Indemnities to contractors for damages suffered.

The contractor's servants shall be allowed to circulate freely through the barracks to inspect the furniture.

Contractor's servants allowed to inspect furniture in barracks.

Service of Clothing, Harness, Camp Furniture, and Utensils.

Central depôts for clothing service, harness, camp furniture, and utensils.

Besides the stores of military effects allowed to each corps, central depôts are established at different military points in the country.

Magazines of Clothing, Harness, and Camp Furniture.

Clothing.

For clothing they consist of cloths, linen, full dress effects and head gear.

Harness.

For harness, saddles, bridles, housings, &c. &c.

Camp furniture and utensils.

For camp tents, and their accessories, soup tins, buckets, kettles, utensils, &c. &c.

Yearly complement of supplies.

In these magazines are stored all the goods yearly bought by the government to replace what has been consumed by each corps, and also the camp effects, &c.; those not in use are returned into stores.

The yearly provision of clothing for the men and harness is generally from $\frac{1}{20}$th to $\frac{1}{30}$th of the effective for which it is destined. That for camp effects must be always complete for a *corps d'armée*.

Stores given by government or hired.

The premises for stores are either given by the government or hired with the same formalities as for the barracks.

Storekeeper's responsibility.

The storekeeper is responsible for any damage in the effects stored verified as caused by the bad state of repair of the buildings, he having neglected to show the necessity of repairing them without delay.

Mode of proceeding in case of urgency of repairs.

The storekeeper can always, in case of urgency, apply to the engineer officer to verify the necessity for immediate repairs, and upon his estimate of the expense, with the approbation of the *sous-intendant militaire*, he can proceed to have the repairs made and pay for them.

Service of Lights and Fires.

Service of lights and fires.

The service of lights and fires consists in the necessary quantities of candles, and burning oil for lighting the barracks, guard-rooms, and all the military establishments, as well as of fuel for cooking purposes, and for warming all military establishments to be furnished by contractors.

Storage of burning materials.

These contractors as well as the others may receive store convenience from the government on the same terms as the others. No stores are allowed for fuel, but only for lighting materials.

Service of Courts-Martial.

Courts-martial.

The premises for court-martial sittings should consist of one room for the court sittings, and one for the records or rolls office.

Wherever it is possible there should be also one room for the reporters, and a second hall for the revision court sittings.

In deficiency of state premises others can be hired.

In towns where there is no state convenience for this purpose, and the lodgings of the commandant of the place are not sufficiently spacious for it, a special place may be hired, after a certificate is obtained from the engineer officer, and the expense be charged as special court-martial expenses.

Engineers to provide fixtures.

The necessary fixtures shall be furnished by the service of the engineers.

Lodgings not allowed to any party attached to the court-martial service.

No person attached to a military tribunal will be allowed to live on those premises, nor will be allowed to claim lodgings for that qualification.

Prisons and Military Houses of Detention.

Prisons and houses of detention.

There are in all principal military stations old military prisons where soldiers are confined. In towns where they do not exist they are sent to the civil prisons, where they are generally kept separate from the other prisoners.

Engineers charged with the construction and preservation of military detention houses.

The corps of the engineers is charged with the construction, improvements, and repairs of the prison buildings under the same regulations as for the barracks.

The prisons are divided into three different classes, viz.,

Central houses of correction.

1st. For military men condemned to one year or more imprisonment. These are called *Central Houses of Correction or Military Penitentiaries*.

1st class military prisons.

2d. For military men condemned to less than a years' imprisonment. These are called military prisons of the first class.

2d class military prisons.

3d. For military men condemned to less than three months imprisonment. These are called military prisons of the second class.

Central Houses of Correction or Military Penitentiaries.

Central houses of correction.

These establishments must be composed, for those under confinement in common, of silence day workshops, and individual cells for the night, cells for the

guards, meadows, and refectory, serving also as a school room, and even as chapel; and for those under solitary confinement, of correctional cells where the prisoners are kept both day and night. Of these there should be a number of dark ones equal to $\frac{1}{15}$th of the confined men, and of light ones equal to $\frac{1}{30}$th.

Of a kitchen, an infirmary, linen stores, wash-house, stores for the industrial productions, and a chapel, if possible.

Of a building for the administration, containing apartments for the commandant, the employés, the inspectors, four for every 100 prisoners, a recorder's office, and a prison office.

A walk of round, enclosed by a wall $5\frac{1}{2}$ yards high, must surround the whole establishment. These are established in the principal military places of the state.

First-class Military Prisons.

1st class military prison.

Must be composed of a house of correction, as described for the central houses, but only for 150 prisoners.

A house of custody and justice for 50 men, comprising apartments for two superior officers, for six other officers with their mess room, quarters for non-commissioned officers and soldiers, consisting of cells or dormitories, cells for accused to be kept secluded, or for the insubordinate accused, a workshop for the men imprisoned, and a common hall. These quarters must be so arranged as to keep the accused always separated from those condemned to imprisonment.

That part of the building destined for the men kept in custody and for the justice, must besides contain a room for the jailer, one for the inspectors, one for the captain reporter, one for the barristers, a postern, a jail.

For the internal service, apartments for the commandant, the accountants, the inspectors, kitchen, infirmary, chapel, jailer's guard room; a pathway must surround the establishment.

Second-class Military Prisons.

2nd class military prison.

Must be composed of a house of custody, and of justice, as for those of first class.

A correctional section as in the central correctional houses, but for 25 to 50 men only.

For the internal service and for the courts-martial, apartments for the director, recorder, inspectors, jailer, who is also charged with the nourishment of the men in custody, the infirmary, a room for the captain reporter, one for the lawyers, a postern, a jail, a parlour, and a guard-room.

A pathway, if possible, must surround the establishment.

Dimensions of Cells.

Cells.

The cells shall have 90 inches length, 70 width, 120 height. Those of the guards, double.

The furniture of a cell consists of a hammock, furnished, a bucket, a board fixed in the wall at the foot of the hammock, 60 inches above the ground.

In dark cells and custody cells the hammock is replaced by a camp bedstead. The fixtures and camp beds are furnished by the engineers.

Officers in confinement.

Officers in confinement receive soldiers' furniture, and they can at their own expense procure other necessaries.

The cooking utensils in prison are furnished by the engineers.

Whitewashing.

The cells are whitewashed once a year, and those of the infirmary as often as the medical officer declares it necessary.

Deteriorations charged as barrack damages.

For deteriorations the same steps are taken as for the barracks.

Galley Slaves.

Galley slaves.

They are placed under a commandant, an accountant agent, an adjunct, and a number of inspectors proportionate to the effective.

Barracks for the Galley Slaves. Stores for the Service.

Lodgings for galley slaves.

Those that are placed at the disposal of the Minister of War are placed in barracks, huts, or tents.

Work-places for galley slaves.

The buildings for their works are under the care of the engineers.

The agent and his assistant are lodged in the buildings, or receive an indemnity regulated by the minister on the proposition of the *intendant militaire*.

Officers lodged in the buildings.

The inspectors, the officers of the police, as well as the troops of the line added to them are also lodged in the buildings.

The *maréchal de logis* is also conveniently lodged.

Warming rooms in winter.

In winter, one warming room in common is established for every 100 men or less, two for every number above 100 men.

Work shops' lights.

A sufficient number of lights in the workshops is established by the *sous-intendant militaire*, with the officer of the engineers.

Direction, Inspection, and Payment of the Works.

Employment of galley slaves.

The officers of the engineers are charged to employ the galley slaves in the works, conforming to the relative existing regulations.

Tools, utensils, and their preservation.

The utensils and their keeping are chargeable to the state or to the contractors, if the works are made by contract.

Engineers to inspect tools and utensils.

The officer of the engineers charged with the direction of the works shall see that the tools are in good condition, and will give his attention to any complaint raised on this subject.

Form No. 1.

MILITARY DIVISION.

Engineers Corps.

Direction of

Place of

STATEMENT of the distribution of Quarters to be assigned to the Troops, to the Officers, and to the different Administrative Services in the Military Buildings of the Place of
according to the Regulations on the Barrack Service, &c., &c.

Form No. 2.

ENGINEER CORPS.

Inspection General of

Direction of

Place of

DETAILED Prospectus showing the Capacity and the Occupation of all the places comprised in each of the Military Buildings attached to the Barrack Service, to its Dependencies, and to different Services of the Administration, &c., in the Place of

Form No. 3.

MILITARY DIVISION.

Engineers Corps.

Direction of

RETURN of the distribution of Lodging to be assigned to the Troops, the Officers, and the different Administrative Services in the Military Buildings of the Places of the Direction of situated in the Military Division, according to the Regulations of on the Barrack Service.

Form No. 4.

ENGINEERS CORPS.

Direction of

Place of

Barracks

Return of the localities

DESCRIPTIVE local Return by Rooms containing an Inventory of the Effects of Furniture remaining permanent in the Barracks serving for the Lodgment of

Form No. 5.

Place of
Barracks of } RETURN of the changes in the Occupation of the Barrack from to

Designation.		Changes taken place.			Number of Beds.		Number of Places for Horses.		Remarks.
of Staircases.	of Rooms or Stables.	By whom evacuated.	Dates.	By whom occupied.	Become vacant.	Newly occupied.	Become vacant.	Newly occupied.	
					(a)	(a)	(a)	(a)	On this column are noted the accessories in the occupation of which changes have taken place.
			Totals - -						
			Difference, more or less - -						

The keeper of the above building,
N.N.

For infantry barracks the columns relating to stabling shall be suppressed.
For officers' lodgings the number of rooms will be substituted for that of the beds, with the due remarks in the last column for all accessories, &c., &c.

Form No. 6.

Place of

RETURN of the Rooms occupied and unoccupied in the Barracks at the Date of

Designation of the Buildings.	Nos. of the Staircases.	Officers' Rooms.				Soldiers' Rooms.				Stables.				Remarks.
		Occupied.		Vacant.		Occupied.		Vacant.		Occupied.		Vacant.		
		Number.	Containing.	Number.	Containing.	Number.	Containing.	Number.	Containing.	Number.	Containing.	Number.	Containing.	
														Nota. In this column shall be noted the unoccupied accessories. Recapitulation of the occupied and vacant Lodgings. Apartments for Officers. for Men. Stabling for Horses.

Certified by the Guard of the Engineers,
This day the 185 .

Form No. 7.

Form of an Agreement for hiring Buildings for Barracks or Stores Service.

Division
Province of
Place of
} Service of

War Administration hiring, or Chief Engineer,

Mr.

Letting.

Agreement, &c., &c.

Form No. 8.

Engineer Corps.

Direction
of
Place
of

Form 18 to 18 .

Register of the Remarks and Propositions made by the General Inspectors of the Arms, by the *Intendants Militaires*, and all other Inspectors of the Service of the War on the Military Buildings of the Place of

Form No. 9.

Engineers Corps.

General
Inspection
of 18 .

Direction
of
Place
of

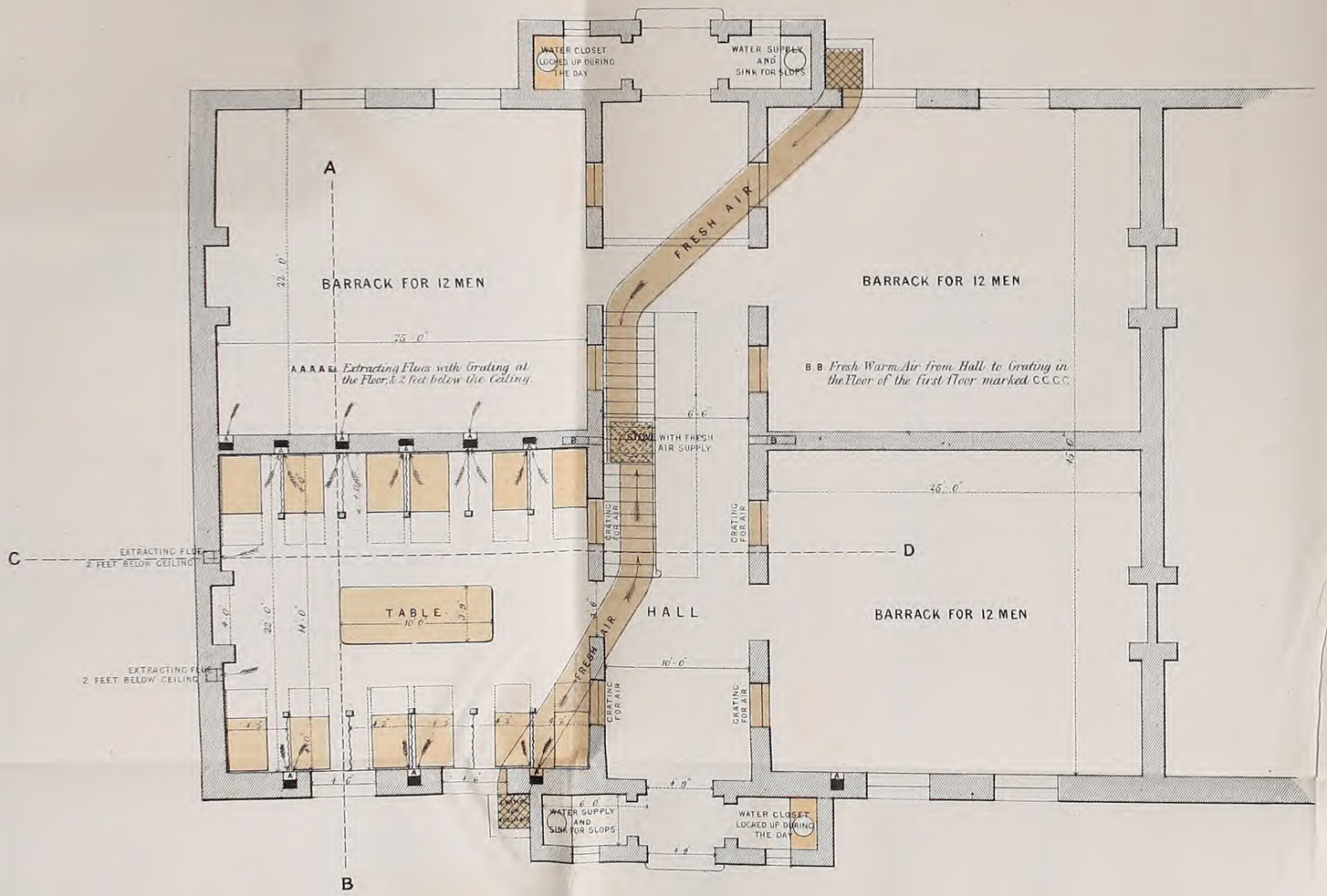
Summary of the Remarks and Propositions made by the Inspector Generals of the Arms, the *Intendants Militaires*, and all other Inspectors of the Service of the War since the last Inspection of the Service of the Engineers.

VENTILATION AND WARMING.

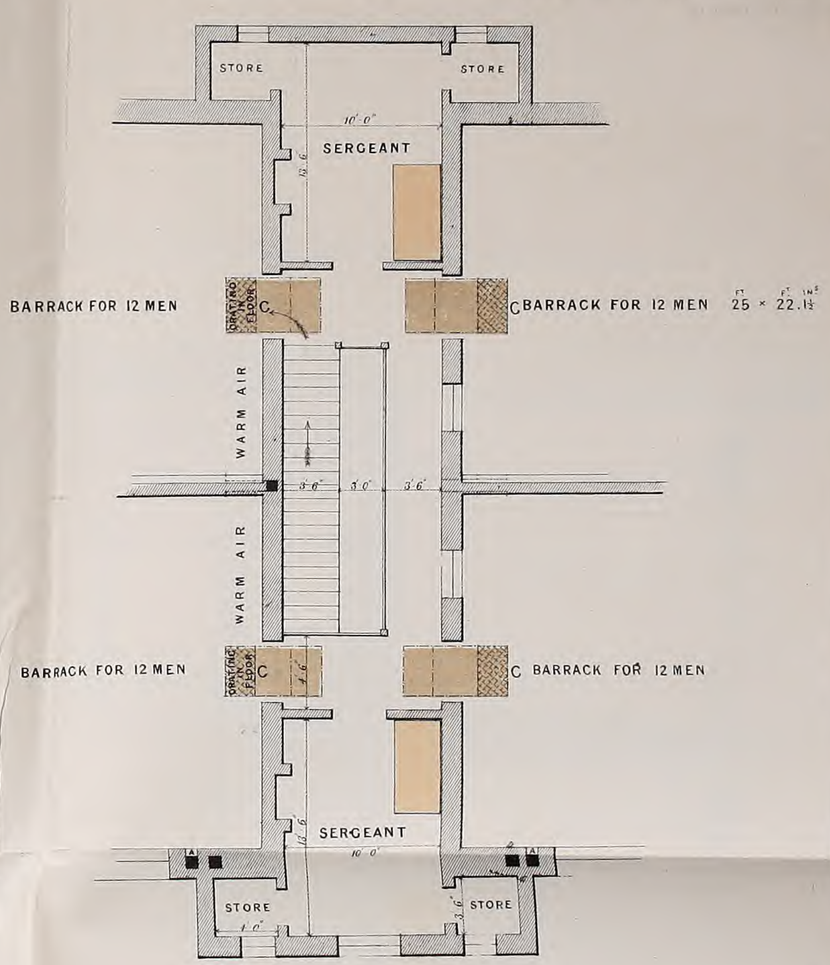
OF

BARRACKS & HOSPITALS.

PLAN ON GROUND FLOOR



PLAN ON FIRST FLOOR



SCALE

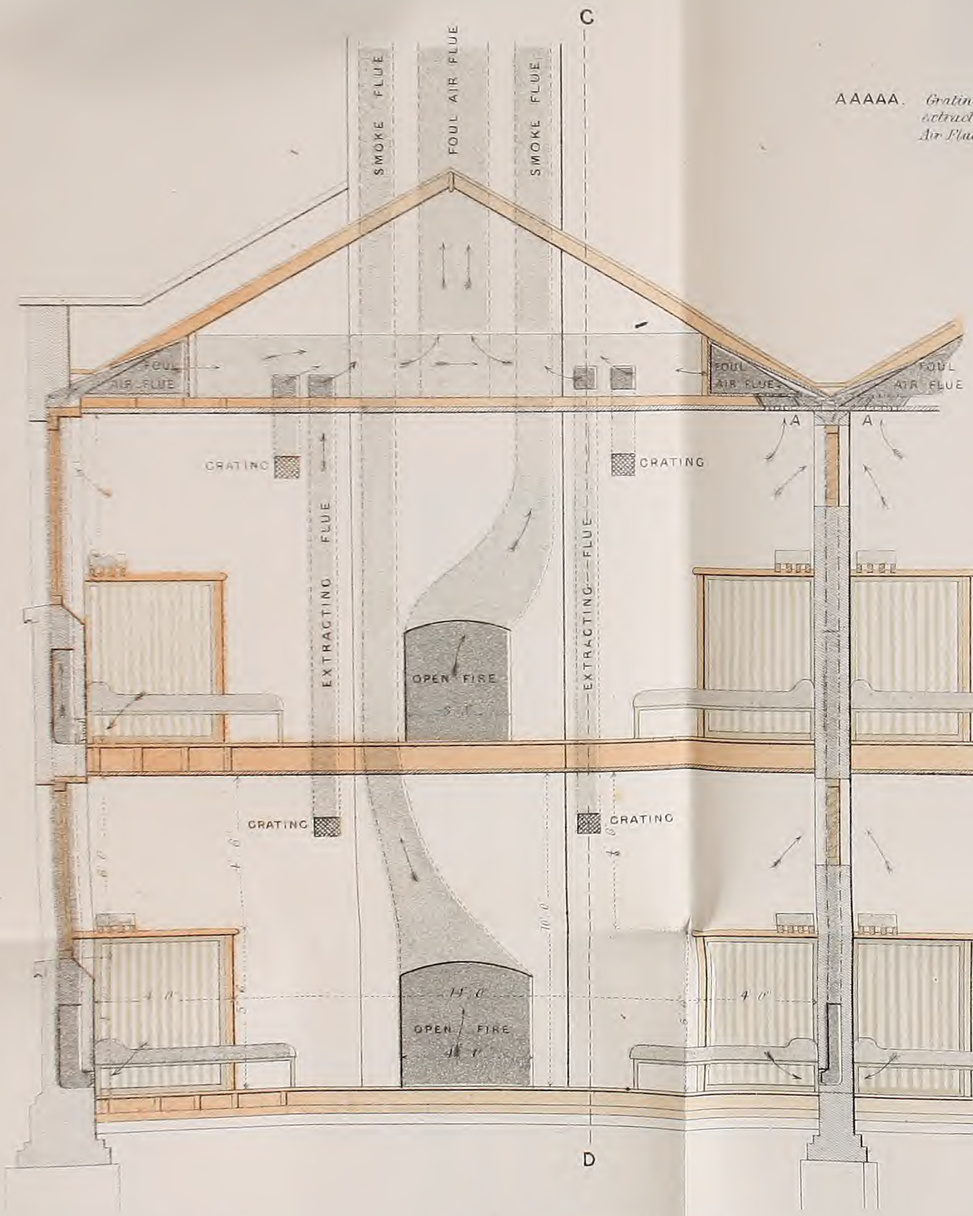
0 1 2 3 4 5 10 20 30 40 Feet

J. Jebb
Col. R. Engrs

Day & Son, Lith.rs to the Queen.

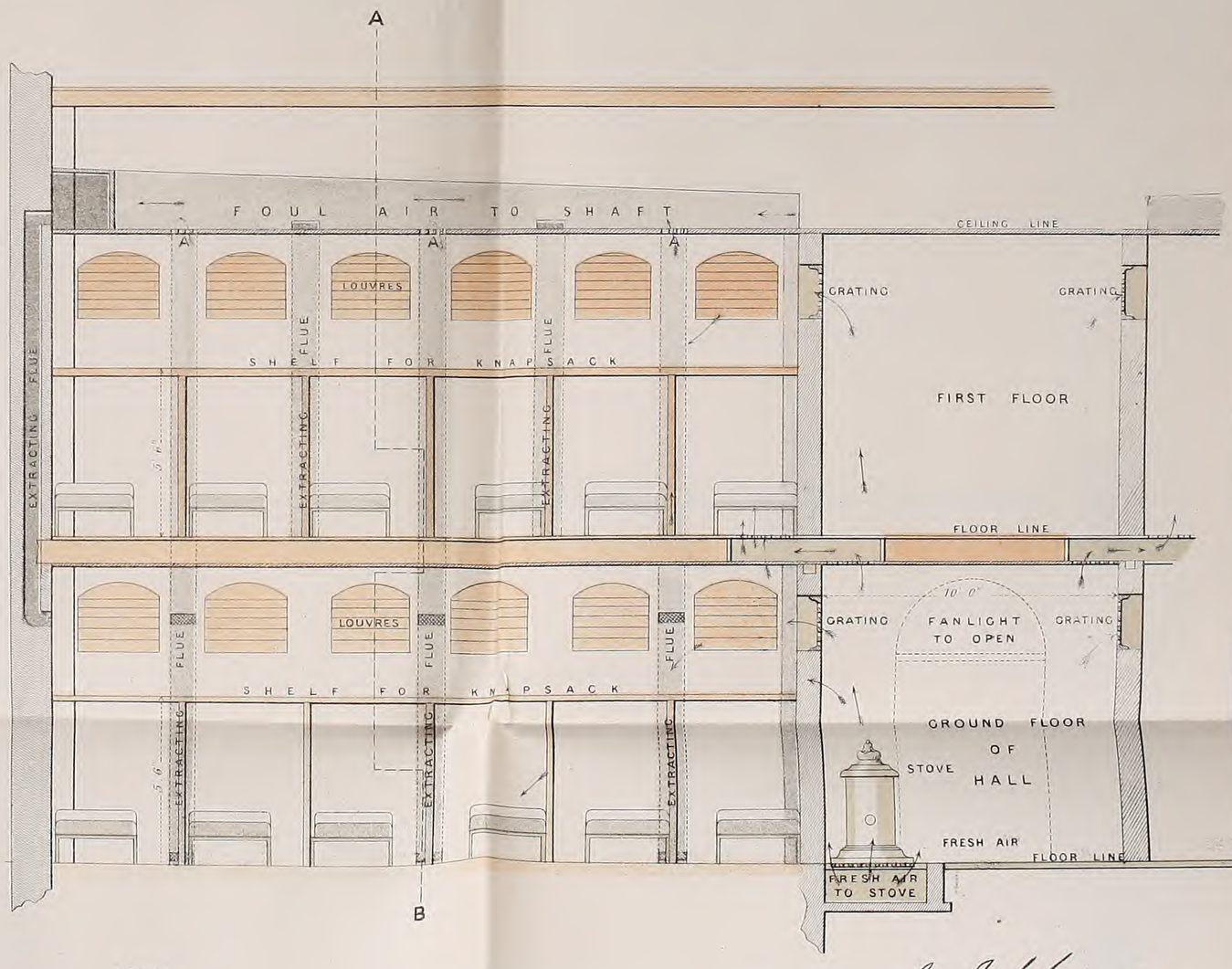
VENTILATION AND WARMING,
OF
BARRACKS & HOSPITALS.

SECTION ON LINE A.B.
SHEWING THE MEANS OF VENTILATION



AAAAA. *Gratings in Ceiling for extraction to the Foul Air Flue.*

SECTION ON LINE C.D.
SHEWING THE MEANS OF VENTILATION



SCALE
Inches 12 0 5 10 20 30 40 Feet

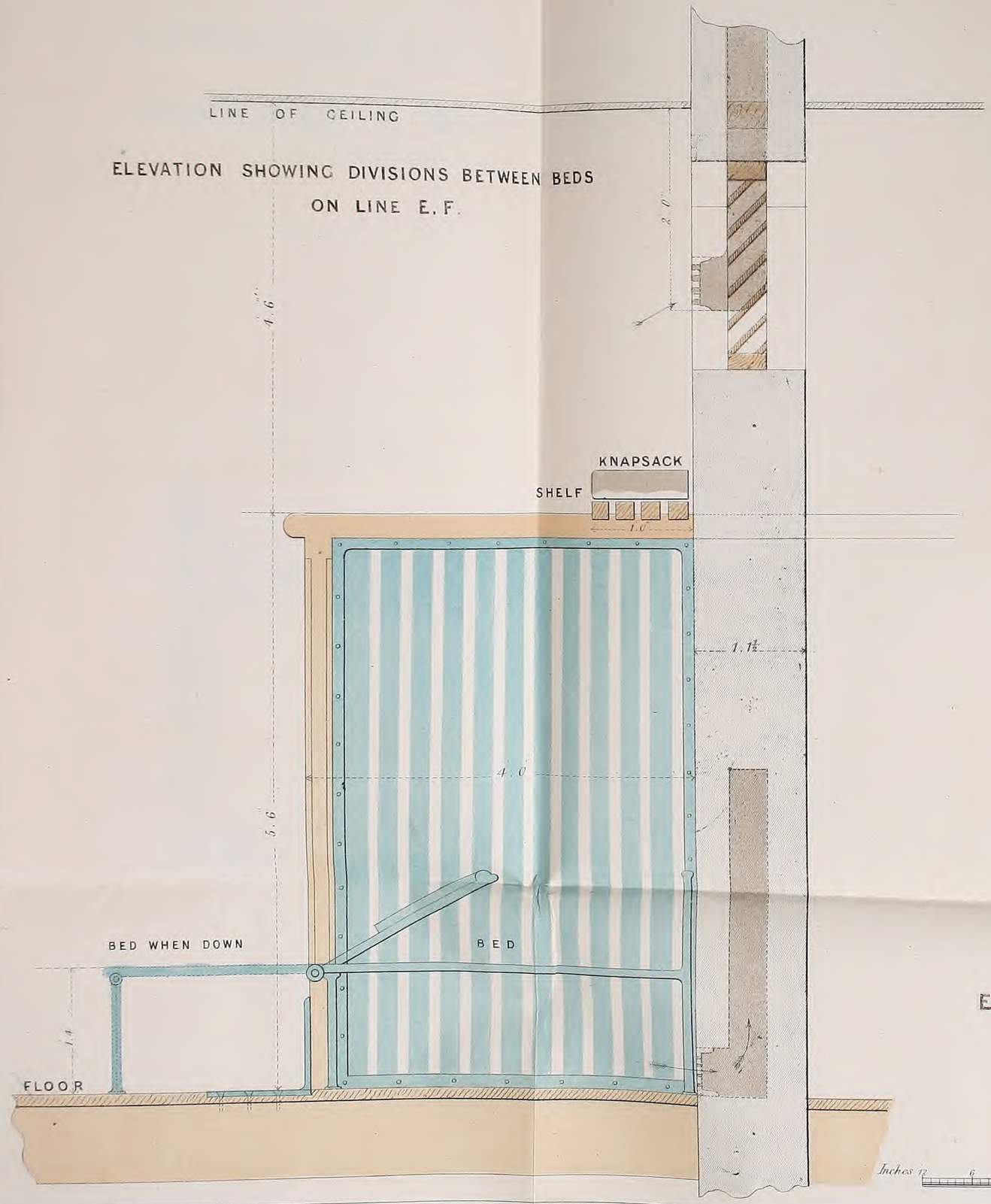
J. Jebb Col R. Engrs

Day & Son, Lith.rs to the Queen.

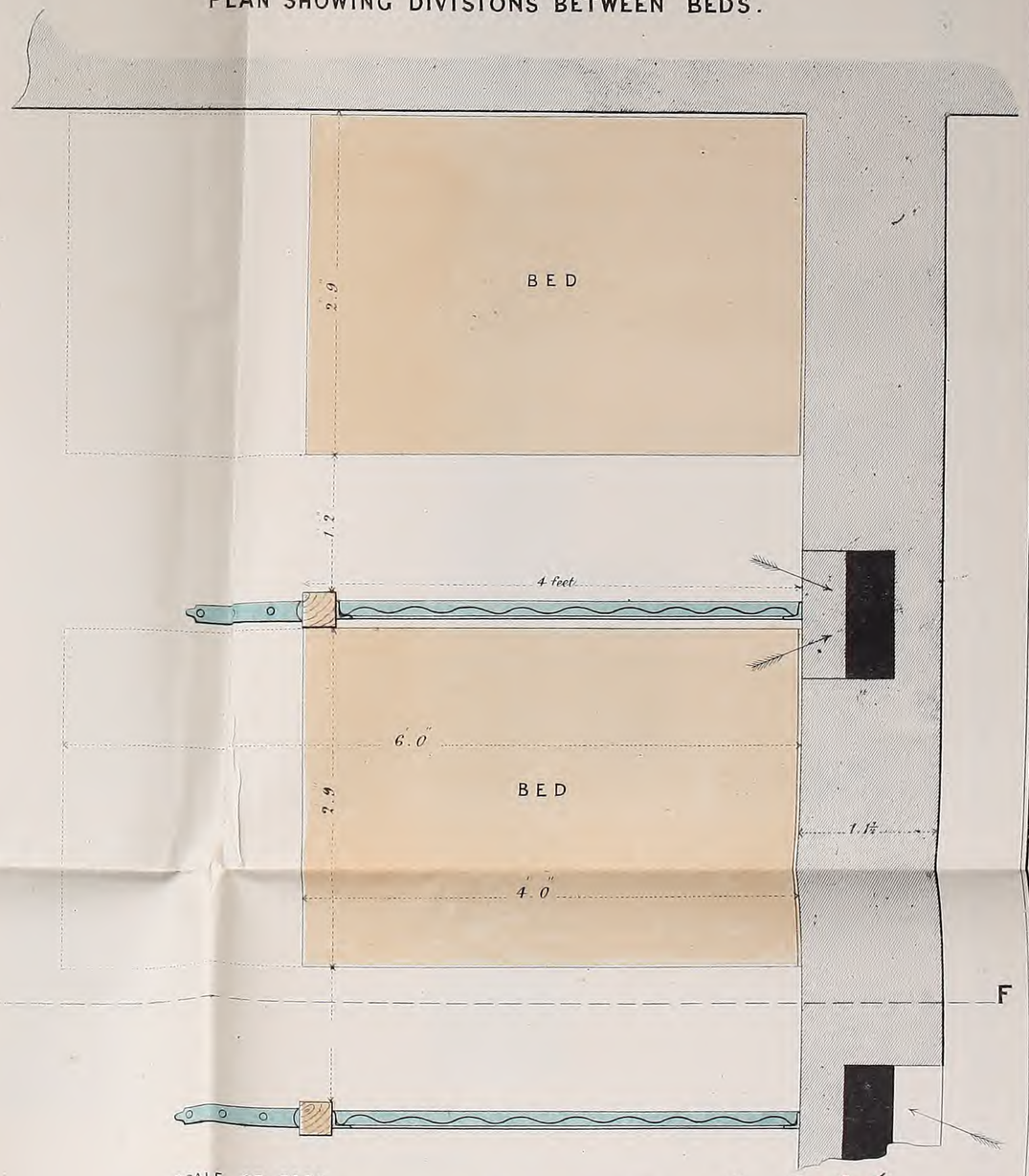
VENTILATION AND WARMING,
OF
BARRACKS & HOSPITALS.

LINE OF CEILING

ELEVATION SHOWING DIVISIONS BETWEEN BEDS
ON LINE E. F.



PLAN SHOWING DIVISIONS BETWEEN BEDS.



SCALE OF FEET.

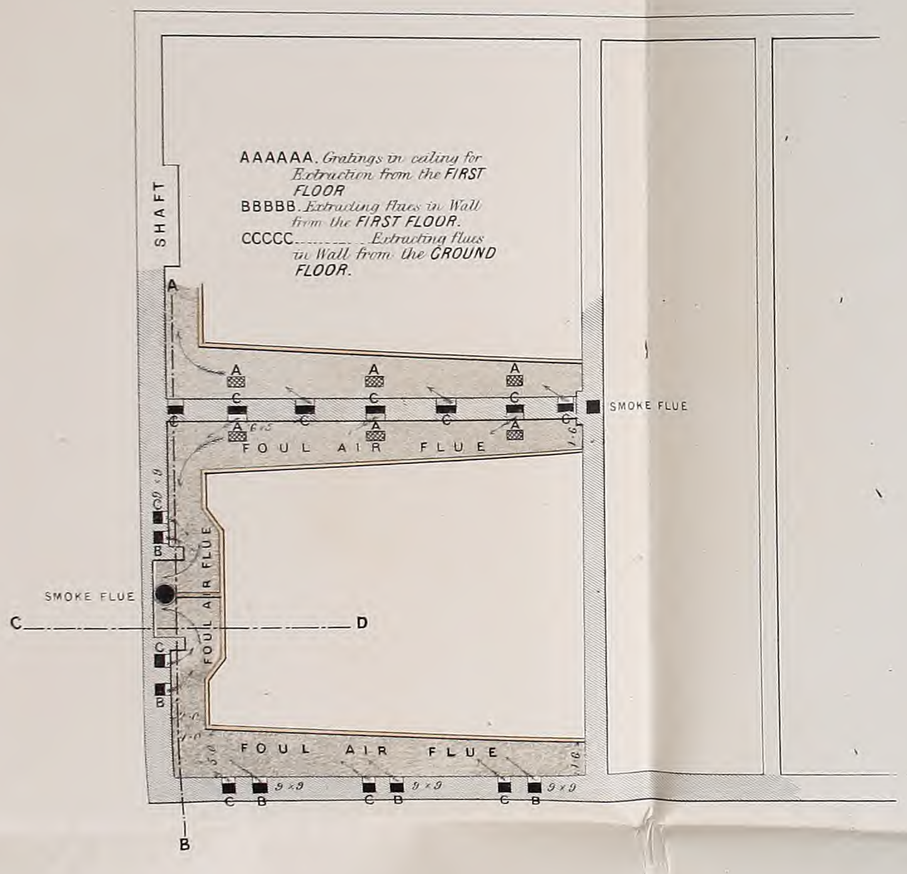
Inches 12 6 0 1 2 3 4 5 Feet

I. Jebb
Col. R. Engrs

Day & Son Lith.rs to the Queen.

VENTILATION AND WARMING.
OF
BARRACKS & HOSPITALS.

PLAN SHEWING FLUES IN ROOF.



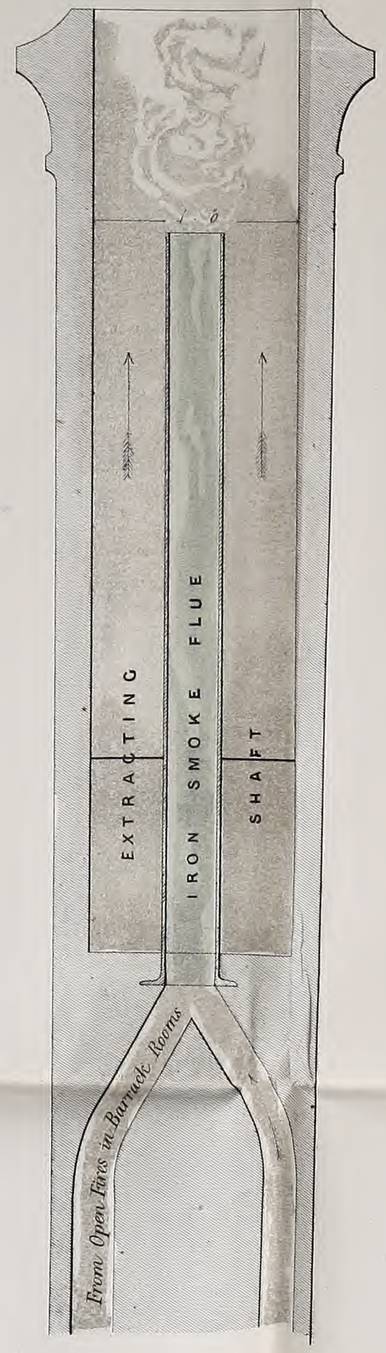
PLAN SHEWING THE FOUL AIR FLUES IN ROOF AND THE EXTRACTING SHAFT.

SCALE.

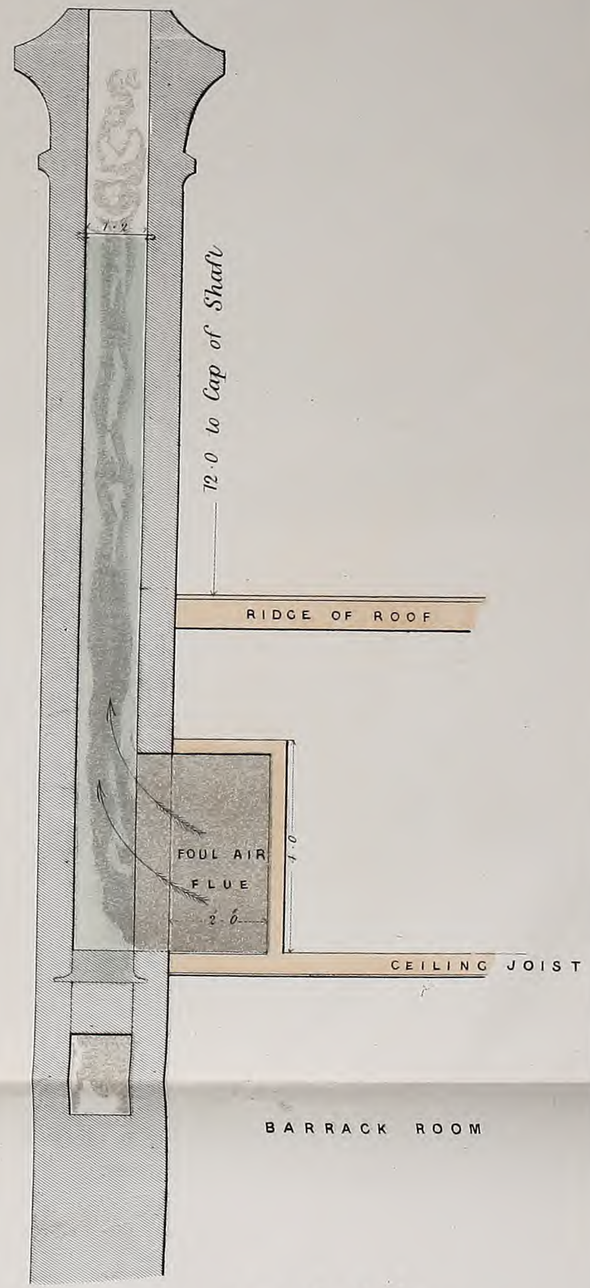
DETAILS OF SHAFT.

PLATE 4.

SECTION AT A.B.



SECTION AT C.D



SCALE.

J. Jebb
Lt. R. Engrs

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VENTILATION AND WARMING,
OF
BARRACKS & HOSPITALS.

FIG. 1.

SECTION

Shewing a ventilating flue open to leeward and closed to windward with self acting valve for excluding fresh air and permitting the escape of foul air

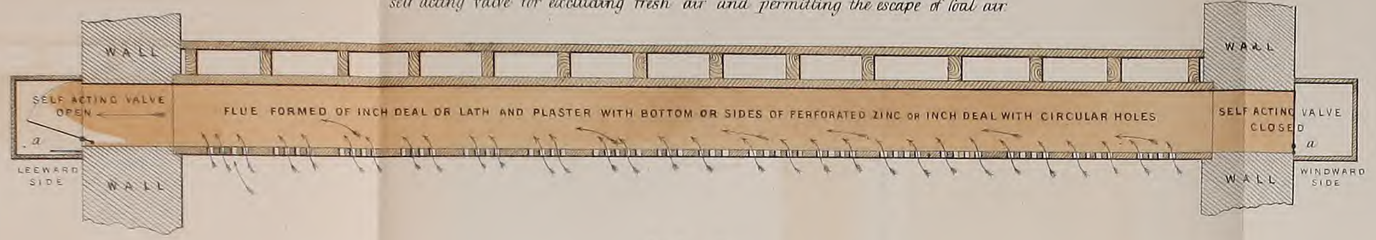


FIG. 6.

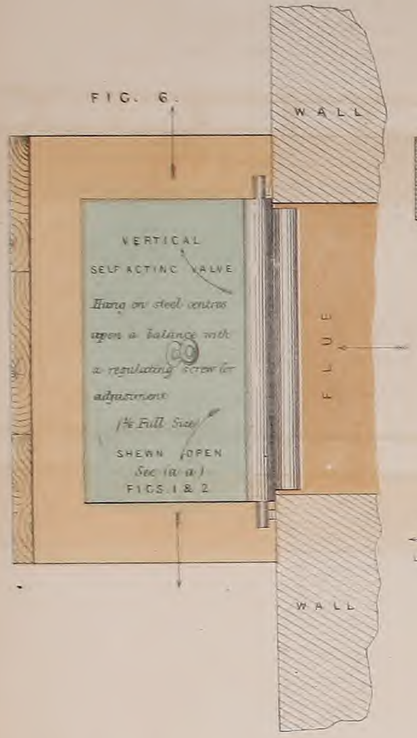
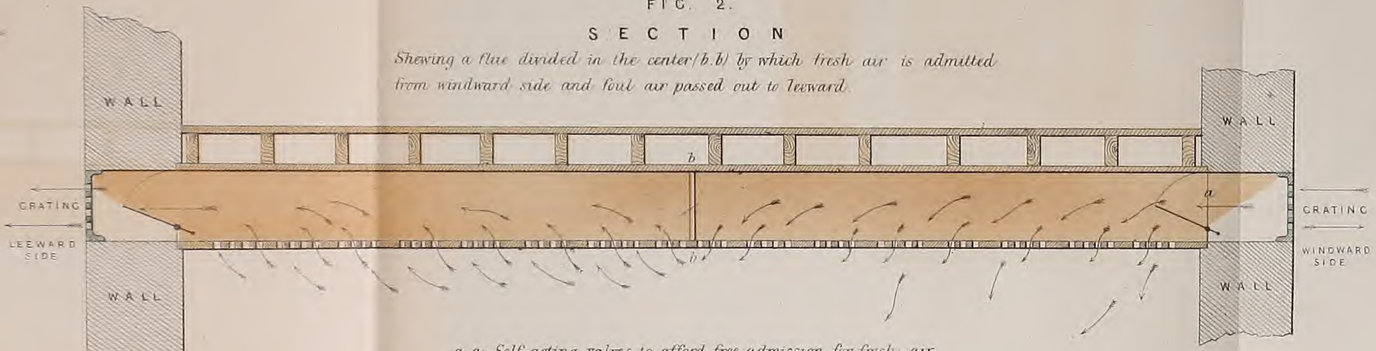


FIG. 2.

SECTION

Shewing a flue divided in the center (b b) by which fresh air is admitted from windward side and foul air passed out to leeward.



a.a Self acting valves to afford free admission for fresh air when required and free exit for foul air at all times. The Valve to windward to be fixed when necessary.

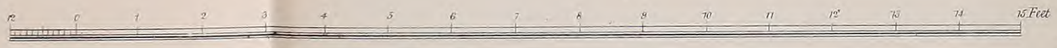


FIG. 3.

SECTION OF A FLUE UNDER A ROOF

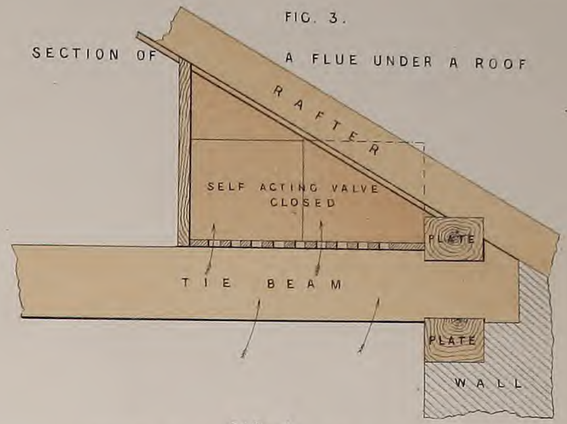


FIG. 4.

SECTION OF A FLUE UNDER A FLOOR

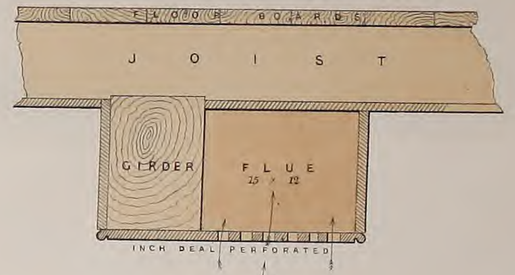
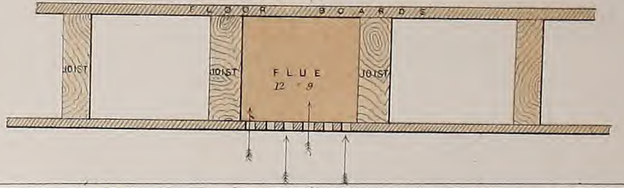


FIG. 5.

SECTION OF A FLUE BETWEEN COMMON FLOOR JOISTS.



J. Tulk
del R.L.

Day & Son Lith.rs to the Queen

INDEX TO EVIDENCE.

INDEX TO EVIDENCE.

Abbreviations used in the Index.—A.M.B. Army Medical Board. A.M.D. Army Medical Department. M.O. Medical Officer. P.M.O. Principal Medical Officer. D.G. Director-General of the Army Medical Department. G.H. General Hospital. R.H. Regimental Hospital. H.Q. Head Quarters. C.O. Commanding Officer. R.E. Royal Engineers.

[The figures refer to the number of the question.]

SUBJECTS.

MEDICAL OFFICERS.

Army.—Candidates; Probationers; Assistant-Surgeons; Surgeons; Department generally; Pay and Allowances; Promotion; Reduction and Restoration to Full-pay; Rank; Rewards; Roster of Service; Leave of Absence; Inspections; Uniform; Funeral honours; Dispensers; Medical Board.

Navy.—Candidates; Assistant-Surgeons; Department generally; Pay; Promotion; Retirement.

E.I.C.S.—Candidates; Assistant-Surgeons; Regimental Surgeons; Superintending Surgeons; Department generally; Pay; Rank and Rewards; Medical Board.

French Army.—Probationers; Grades of M.O.; Rank; Promotion; Retirement; Council of Health.

Belgian Army.—Grades; Promotion; Retirement.

SANITARY SCIENCE.

Military Hygiene.

Sanitary Measures.—Ventilation; Heating; Occupation for Soldiers.

Sanitary Officer.—To the Army; Field Inspector; Sanitary Defects at Scutari.

RETURNS, REPORTS, &c.

Medical Registers; Periodical publication; Diet Rolls.

Confidential Reports.

STATISTICS.

SICKNESS AND MORTALITY.

Army.—At home; compared with civil population; causes of; in India; Mortality in the Crimea.

City Police Force.—Vital Statistics of.

Invaliding.—Out-pensioners; In-pensioners.

BARRACKS AND ENCAMPMENTS.

Encampments; Barracks; their Construction and Repair; Sanitary Defects; insufficient Accommodation for Married Soldiers; Barracks in India; French Barracks; Belgian ditto.

RATIONS AND MESSING.

Mode of Supply; Insufficiency of Ration; Cooking; Rations on Field Service; Spirit Ration.

CLOTHING.

Clothing generally; Shako; Forage Cap; Shirt; Stock; Great Coat; Trowsers; Waist belt; Knapsack; Boots; Supply of "Necessaries."

French Army.—Recruiting and Pay; Rations; Duty; Clothing.

HOSPITALS.

British; Military.—Construction and Repairs; System of Supply; Chatham Hospitals; Fort Pitt; Portsmouth; Winchester; Netley; Scutari; Balaklava: General Hospitals; their Construction; Nursing; Hospital Serjeants; Field Hospitals, general, divisional, and regimental; Hospital Diets; Military Hospitals in India.

Naval—generally; Haslar; Melville Hospital.

Civil.—In the East; Renkioi, Smyrna. London Hospital; Guy's.

Foreign Hospitals.—*French*—Paris Hospitals generally; Lariboisière; La Charité; Beaujon; Hotel Dieu; St. Antoine; St. Louis; Val de Grâce (Military); Vincennes (Military). *Belgian*—St. Jean; St. Pierre; Military Hospital at Brussels.

Lunatic Asylums.—Military and Civil; Yarmouth; Fort Pitt; Haslar.

TRANSPORT.

For Sick and Wounded.

MEDICAL OFFICERS.

Army.

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2456–7; (*Mapleton*), 4486–93; (*Hall*), 5593, 5606–7; (*Gibson*), 9123.—Competitive examinations useful in raising the standard of qualification (*Parkes*), 765.—Practical examination before going to Chatham unnecessary (*Smith*), 77–8.—Dr. Smith and three other M.O. are the examiners (*Smith*), 79, 106.—Thinks the officers quite competent to conduct the examinations (*Smith*), 85.—Candidates should be examined by a Board of Army M.O. in presence of the D.G. (*Smith*), 1, 124.—Head of department should attend to acquire a knowledge of individual candidates (*Smith*), 93–5; (*Liddell*), 263.—Proposed professors at Netley might form a board of examiners (*Smith*), 102–3.—Special examiners might be desirable (*Smith*), 86–7, 127–8.—But objects to it as a slur on the A.M.D (*Smith*), 92, 125–6.—Same objection would hold as to Navy, but not E.I. Co's. service (*Smith*), 93.

An independent and special body of examiners desirable (*Brodie*), 519; (*Paget*), 727–32, 751–2; (*Parkes*), 762; (*Meyer*), 960; (*Alexander*), 2458; (*Brown*), 2796.—Disadvantageous (*Hall*), 5608.—The same board might examine for army, navy, and E.I. Co. (*Parkes*), 806–11.—A practical examiner necessary for a good examination (*Brodie*), 520–1.—Teachers the best examiners (*Brodie*), 522; (*Paget*), 733–4; (*Brown*), 2798.—A good examiner could ascertain the relative merits of candidates (*Brodie*), 557.—Cases with commentaries a useful test, better than essays (*Brodie*), 558, 561*.—Decision of the merits of these very difficult (*Parkes*), 788–99.

A good general education most desirable (*Brodie*), 526–7, 537–40; (*Fergusson*), 628; (*Meyer*), 957–9; (*Alexander*), 2454–5.—May be brought up gradually to a higher standard (*Brodie*), 531–3, 561*.

Probationers.—Formerly lived at their own cost (*Smith*), 4.—Latterly the three seniors granted 6*s.* a day and allowances (*Smith*),

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4.—Probation at Chatham a sufficient test of fitness (*Smith*), 98.—Combined with examination in London (*Smith*), 101.—Proposes to have 40 probationers and M.O. at Netley (*Smith*), 149.—All probationers to be paid and receive allowances (*Smith*), 157–8.—Probationers should be kept some time at G.H. (*Paget*), 750; (*Alexander*), 2470, 2512.—Should be kept 12 months (*Smith*), 48.—Six or eight months (*Hall*), 5618.—Stay at Chatham is uncertain (*Taylor*), 2230.—Supervision of, at Chatham (*Taylor*), 2233–6.—Instruction given to (*Taylor*), 2238–58, 2297–8.—Instructed in regulations and duties of the service (*Smith*), 2, 39, 40.—And in the application of bandages, &c. (*Smith*), 2.—Pathological instruction invariably given (*Smith*), 5, 17–20, 108–9; (*Taylor*), 2252, 2297–8.—Trained in sanitary science at Chatham (*Smith*), 14.—No special teaching of this science in the army (*Smith*), 15, 41–5.—Nor in any branch of the public service (*Smith*), 16.—Should be instructed in it (*Smith*), 60; (*Hall*), 5513–14.—Each probationer has from 20 to 25 sick to treat (*Smith*), 110–11.—Probationers are reported on by P.M.O. and divisional staff-surgeons at Chatham (*Smith*), 2; (*Taylor*), 2241.—Their practical knowledge is tested (*Smith*), 2.—Undergo a practical examination at Chatham (*Smith*), 36.—No special examination in sanitary science (*Smith*), 61.—Should be examined after the course at G.H. (*Hall*), 5616–17.—The appointment of a probationer as assistant-surgeon depends upon his efficiency as reported (*Smith*), 2.—They are sometimes rejected, but not in large proportion (*Smith*), 4.—Rejections have been for irregular conduct, not deficient skill (*Smith*), 4.—Should be examined before being commissioned (*Gibson*), 9153.—System of probationers advantageous (*Taylor*), 2319–22; (*Hall*), 5614–15; (*Gibson*), 9130–1.—Was given up during the war (*Smith*), 4, 38.

Assistant-Surgeons.—Examination of, previous to promotion, in abeyance, because it created great dissatisfaction (*Smith*), 88; (*Taylor*), 2269; (*Brown*), 2808–18; (*Hall*), 5623.—Mode in which it was conducted (*Hall*), 5626–30.—Examination before promotion objectionable (*Taylor*), 2270–81, 2293–4.—Advisable (*Brodie*), 534–6; (*Fergusson*), 635; (*Paget*), 701–3; (*Parkes*), 767, 777–9; (*Alexander*), 2459–62, 2494–7; (*Brown*), 2807; (*Hall*), 5631–3.—Difficulties in carrying it out (*Parkes*), 768.—Mode in which it might be fairly conducted (*Hall*), 5634–5.—Should be more practical than first examination (*Alexander*), 2463–4.—Should be chiefly on hygiene and sanitary matters (*Parkes*), 772–3.—M.O. should be examined before each step of promotion up to Deputy-Inspector (*Gibson*), 9155–60.—Annual reports upon, calculated to supply the place of an examination (*Smith*), 89; (*Paget*), 756; (*Taylor*), 2282–3.—Medical reports and records would afford a good test of an officer's merits (*Paget*), 754–5.

Assistant-Surgeons may acquire hygienic knowledge while serving in garrisons (*Smith*), 51.—Thinks they are generally conversant with sanitary science (*Smith*), 52.—Have no power to carry it out (*Smith*), 52–3.

Assistant-Surgeons should be first appointed to regiments (*Taylor*), 2248–50, 2323–9; (*Alexander*), 2471–4, 2500–3, 2513–18.—Should be afterwards removed to staff (*Alexander*), 2514–17.—Indifferent whether appointed first to a regiment or the staff (*Hall*), 5671–2.—Should always serve in a regiment before being promoted (*Hall*), 5673–6.

Assistant-Surgeons in charge of a battalion should receive extra allowances (*Alexander*), 8977.—M.O. doing duty of a higher rank should receive increased pay (*Mouat*), 9730–4.

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Department generally.—Establishment before and since the Russian war (*Smith*), 7241–59.—Is now sufficient (*Smith*), 7260.—Number of M.O. appointed annually (*Smith*), 7305. Distribution of M.O. (*Smith*), 7263–4.—Medical staff of the Royal Army not sufficiently numerous in India (*Mouat*), 9700.—An adequate medical staff should be sent there (*Mouat*), 9707.—With proper inspectorial officers (*Mouat*), 9708–17.—The Queen's officers do not get a fair share of the lucrative

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Promotion by seniority removes stimulus to exertion (*Brodie*), 547–8, 588.—Sacrifices the interests of the service to those of individuals (*Smith*), 7401.—Will not answer (*McNeill*), 9794–6.—Would not work well alone (*Hall*), 5693–8.—Has worked badly in India as regards the higher grades (*McNeill*), 5798–803.—Promotion should be by seniority (*Taylor*), 2286–89, 8186–90; (*Mapleton*), 4520, 4544, 4556–62; (*Beatson*), 7731, 7781; (*Gibson*), 9205–9.—Executive officers not having administrative talent should be removed when they become senior of the executive rank (*Gibson*), 9210–22.—Thinks all officers should be taken by seniority, even for military command (*Gibson*), 9923.—Incapable officers should be removed (*Gibson*), 9229.—Thinks there would be no difficulty in thus getting highly qualified commanders (*Gibson*), 9230–2.

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Promotion.—Sufficient in the lower ranks, not in the higher (*Liddell*), 261.—Is made by selection and seniority (*Liddell*), 262, 312–13, 414, 424.—Director-General judges of the officers from personal knowledge and their medical reports (*Liddell*), 408–13.—Receives no confidential reports upon them (*Liddell*), 414.—Length of service before being eligible for promotion (*Liddell*), 416–18.

Retirement.—Compulsory (*Liddell*), 419–20, 431.

E.I.Co.'s Service.

Candidates.—Subject to approval of the President of the Board of Control (*Parkes*), 812.—Certificate of moral character required (*Parkes*), 814–17.—System of examination (*Paget*), 674–80.—The examination is practical (*Paget*), 720–26, 757–8.—No examination in general knowledge (*Paget*), 682–4.—No special military medical examination (*Paget*), 690.—A minimum standard of acquirement fixed (*Paget*), 697, 730.—The most general deficiency is in natural history (*Paget*), 680, 717–19.—The qualifications of the candidates have increased (*Paget*), 685, 692–94; (*Parkes*), 761–64.—Relative number of vacancies and candidates (*Paget*), 711–14.—The inducements are sufficient to get the best men (*Arnott*), 8314.

Assistant Surgeons.—Duties of (*Arnott*), 8432–38.

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Department generally.—Organization of the Indian Medical Department (*Arnott*), 8304.—Number of M.O. in the Bombay Presidency (*Arnott*), 8371.—Not sufficient (*Arnott*), 8331–32.—Native regiments have not a sufficient number of M.O. (*Arnott*), 8321–23.—System of appointments and promotions (*Arnott*), 8307–13.—Average service before promotion (*Arnott*), 8372–78.

Pay.—Emoluments satisfactory (*Arnott*), 8365–67.—System of allowances in addition to pay (*Arnott*), 8637–42.

Rank.—Position of M.O. not satisfactory as regards relative rank (*Arnott*), 8333–64.—M.O. do not share fairly in the distribution of honours (*Arnott*), 8324–30.

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Medical Board.—Constitution of (*Arnott*), 8309–11, 8415–23.—Duties of (*Arnott*), 3394–408.

French Army.

Qualifications demanded of candidates (*Sutherland*), 4353; (*Alexander*), 4587.—The French government undertakes the education of the M.O. in the specialties of his profession (*Sutherland*), 4359–61.—Course of instruction at the Val de Grâce (*Sutherland*), 4353–58; (*Alexander*), 4587.—Organization of the school at the Val de Grâce (*Alexander*), 4587.

Grades and relative rank of M.O.; inspectors, administrative officers—all other grades executive; appointments to regiments and hospitals; promotion partly by selection and partly by seniority; recommendations for promotion; examination on promotion; compulsory retirement; sick leave to M.O.; Council of Health of the Army (*Alexander*), 4587.—Constitution of (*Balfour*), 9584.

Belgian Army.

Grades of M.O., system of promotion (*Alexander*), 4587.—Competitive examination for promotion (*Alexander*), 4595–8.—Compulsory retirement (*Alexander*), 4587.

SANITARY SCIENCE.

Of great importance in the army (*Brodie*), 593; (*Parkes*), 911–15; (*Taylor*), 2330–40, 2388; (*Farr*), 7154–62.—Special instruction in sanitary science requisite (*Sutherland*), 9495, 9981; (*McNeill*), 9956.—System of instruction in hygiène in British and French schools (*Sutherland*), 6550.—No special teaching of this science in the army (*Smith*), 15, 41–5.—Nor in any branch of the public service (*id.*), 16.—Nor in civil life (*Fergusson*), 661.—The technicalities of sanitary science are quite a modern thing (*Hall*), 5478–9.—Hygiène forms part of every medical man's education (*id.*) 5609.—Great difference in amount of sanitary knowledge possessed by different officers (*Sutherland*), 6578–9.—Desirable that it should be more general, (*id.*), 6581, 6583–5.

Military Hygiene.

is professed to be taught in Edinburgh and Dublin (*Smith*), 63.—The knowledge gained there is superficial (*id.*), 121–22.—Professorships in Edinburgh and Dublin unnecessary (*id.*), 71–2, 120; (*Brown*), 2805.—Injurious (*Fergusson*), 629–32; (*Paget*), 698–9.—Could be best taught in the chief military hospital (*Smith*), 67, 123; (*Brodie*), 516–17; (*Paget*), 700; (*Alexander*), 2465–6.—And subsequently to admission into the service (*Brodie*), 525, 616–17; (*Fergusson*), 627; (*Parkes*), 776, 892–907; (*Meyer*), 956, 961–2, 1020–5; (*Brown*), 2804; (*Hall*), 5613.—Sanitary training in a military hospital essential (*Brodie*), 600; (*Fergusson*), 633–4; (*Sutherland*), 6551–65, 6568–75.—Lectures on military hygiène should be established at Netley (*Smith*), 73; (*Fergusson*), 660; (*Brown*), 2806; (*Gibson*), 9133–4; (*McNeill*), 9956–8.

No manual of sanitary science exists (*Smith*), 47; (*Parkes*), 908.—Has long intended to write one, but has failed from want of time (*Smith*), 56.—Such a manual is a desideratum (*Hall*), 5619–21.—Works on hygiène by army M.O. (*id.*), 5475–7.—No special naval manual of sanitary science (*Liddell*), 211.—Statistical reports partly supply the want (*id.*), 213.—A.M.O. were the first promoters of sanitary science (*Sutherland*), 6589.—A.M.O. are forced to become sanitary officers (*Hall*), 5471–4, 5511.—Have always been engaged in preventing as well as treating disease (*id.*), 5482–4.—Have the knowledge requisite to make good sanitary officers (*id.*), 5489.—Are instructed to report upon the causes of disease among the troops (*id.*), 5485–8.—Are not sufficiently consulted or attended to in sanitary matters (*Taylor*), 2341–52, 2389; (*Alexander*), 2706, 2712–14; (*Mansel*), 4215–16; (*Tulloch*), 6309, 6324–9; (*Dartnell*), 8345–6; (*Gibson*), 9258.—Instances of this (*Alexander*), 2353–73, 2391–5.—M.O. sometimes snubbed for making suggestions, instances (*Taylor*), 2344–5; (*Alexander*), 2710–11.—M.O. should invariably be consulted on sanitary questions (*id.*), 2706, 2713, 2717; (*Mansel*), 4234–6; (*Hall*), 5662; (*Beatson*), 7978–83.—There is no rule on the subject (*Taylor*), 2174; (*Alexander*), 2739–40.—Should be defined by regulation (*Mansel*), 4238–9; (*Beatson*), 7979.—M.O. have no power to carry out sanitary measures (*Smith*), 52–3; (*Rawlinson*), 3326–9.—Have not sufficient independent authority on sanitary matters (*Rowdon*), 3910.—Some measure required to make sanitary recommendations of M.O. available (*Sutherland*), 9497, 9505–11.—Difficulties in getting sanitary measures carried into effect (*Taylor*), 2396; (*Alexander*), 2561; (*Balfour*), 9549; (*Mouat*), 9608–26.—Remedy suggested for this (*Balfour*), 9552–3, 9582.—M.O. should be required to make representations in writing (*Alexander*), 2708; (*Airey*), 3171; (*Hall*), 5343–4, 5400; (*Sutherland*), 6586; (*McNeill*), 9952.—Sending a copy to P.M.O. (*id.*), 9952.—C.O. should be held responsible for their non-adoption (*Alexander*), 2709.—The military authorities should be required to take these representations into consideration, and to record their reasons for not carrying them into effect (*Sutherland*), 6587.—There are no sanitary regulations for

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towns to be occupied by an army (*Airey*), 3215–8.—Nor for bivouacs (*id.*), 5219.—Officers of R.E. are not specially instructed in sanitary engineering (*Laffan*), 6770–2.

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Types of disease caused by neglect of sanitary regulations (*Sutherland*), 9513–23.—Sanitary defects in the Crimea of the same character as at home, but modified by temperature (*id.*), 9474.—Steps taken of late years for improving sanitary conditions of towns in England (*id.*), 9481.—Objects of the Local and Public Health Acts (*id.*), 9482.—Principal difference in the provisions of these Acts and the sanitary regulations of the army, (*id.*), 9483.—Practical working of the Health Acts (*id.*), 9484.—Results of model lodging-houses (*id.*), 9490.—Barracks might be made as healthy (*id.*), 9491.—Results of sanitary improvements on the health of the boys in the R.M. Asylum (*Balfour*), 9532–7.—Measures adopted in the army against epidemic cholera (*Smith*), 9463–5; (*Sutherland*), 9502–3.—Means adopted against epidemics (*id.*), 9492.—Re-vaccination in the army desirable (*Dartnell*), 8681.—Sanitary measures adopted in the hospitals on the Bosphorus (*Rawlinson*), 3335.—At Balaklava (*id.*), 3336.—At Scutari (*Sutherland*), 9479.—When scurvy appeared in the Crimea, Sir John Hall represented to the Commander-in-Chief the necessity of procuring fresh provisions (*Hall*), 5373; but they could not be obtained (*id.*), 5374–6.—Plan for reducing the amount of venereal in the army (*Dartnell*), 8656–63.

Ventilation.—Means of efficient, still a desideratum (*Chapman*), 3516; (*Laffan*), 6772–3.—Great improvement in ventilation during the last ten years (*McNeill*), 9831.—Different modes of ventilation (*Sutherland*), 4297–308, 4318; (*Jebb*), 5129–32, 5170–1.—Description of ventilating brick for introducing fresh air into rooms (*Bird*), 6878–81.—Best mode of ventilating hospitals (*Alexander*), 4587; (*Sutherland*), 6536–42.—Natural ventilation preferable (*Mapleton*), 4383–4; (*Alexander*), 4599–600; (*McNeill*), 9824.—Open fire-places and foul air tubes sufficient (*Mapleton*), 4336.—Artificial preferable (*Chapman*), 3518–26.—Artificial will not answer in English hospitals with open fire-places (*Mapleton*), 4380–2.—Difficulty of ventilating large rooms (*Jebb*), 5136–8.—Mode of ventilation suitable for existing barracks (*Jebb*), 5161.—Ventilation in barracks not hitherto studied (*id.*), 5193.—Ventilation at Pentonville (*id.*), 5133–5, 5150–5; at Millbank and Dartmoor prisons (*id.*), 5159.—Enforced in prisons by Act of Parliament (*id.*), 5194.—Health of prisoners good (*id.*), 5195–6.—Ventilation at Chelsea Hospital (*Maclachlan*), 6128–39.—State of ventilation on board transports (*Dartnell*), 8708–11.—In barracks (*Sotheron*), 5003–10; (*Jebb*), 5164, 5248; (*Balfour*), 1542. *See* also Barracks. Hospitals.

Best mode of heating hospitals (*Sutherland*), 6539.—Heated air objectionable (*Mapleton*), 4388–9.

Occupation for Soldiers.—Employing the men decreases dissipation (*Lindsay*), 5863–4.—Men might be permitted to work at their trades (*Lawrence*), 4091–3.—Might be advantageously employed to work for the public (*Jebb*), 5273–5.—Occupation of European soldiers in India (*Arnott*), 8576–83.—Amusements of ditto (*id.*), 8570–5.—Means of recreation for soldiers miserably defective (*Lawrence*), 4019–29; (*Lindsay*), 5861–2.—Have been increased (*Jebb*), 5253.—Additional means required (*Airey*), 3150.—Garrison libraries useful (*Lawrence*), 4032–3; (*Mansel*), 4268.—Should be better lighted and fitted (*Lawrence*), 4033–9, 4050, 4062–5; (*Mansel*), 4267.—Regimental reading rooms at Aldershot well attended (*Lawrence*), 4042–4, 4051–61.—Subscription to libraries (*id.*), 4073–6.—Selection of books for (*id.*), 4077–90, 4093.—Coffee might be supplied and newspapers taken in (*id.*), 4104–12; (*Mansel*), 4276–8.—Or a public tea and coffee room might be attached to reading room (*Lawrence*), 4115–20.—Lectures at Aldershot during the winter well attended (*id.*), 4068–71.—Great want of spiritual instruction in the army (*Jebb*), 5249–51.

Sanitary Officer.

Appointment of a sanitary officer to the army would be a great advantage (*Rawlinson*), 3333–4; (*Martin*), 3346; (*Lawrence*), 4164; (*Tulloch*), 6310–20; (*Arnott*), 8603–6; (*McNeill*), 9954.—Not advisable (*Hall*), 5490, 5653–62.—The early appointment of a sanitary officer in the Crimea would have prevented much mischief (*Sutherland*), 9493.—If appointed should be a second P.M.O. (*Hall*), 5492–4.—Subordinate to P.M.O. (*Hall*), 5639–40, 5643–9; (*Dartnell*), 8850–2.—Should be attached to quartermaster-general, and independent of P.M.O. (*Martin*), 3360–79; (*Lawrence*), 4165–71; (*Arnott*), 8607–14.—Attached to Q.M.G., but subordinate to P.M.O. (*Alexander*), 9007–12.—Should be attached to A.M.D., not to inspector-general of fortifications (*Laffan*), 6788–9, 6793.—Duties sanitary not curative (*Martin*), 3366–9.—Not desirable to separate the sanitary from the medical service of the army (*Farr*), 7163.—There should be a field inspector with an army, to superintend sanitary measures (*Airey*), 3208–13; (*Alexander*), 9006; (*Sutherland*), 9494; (*Balfour*), 9587–90.—Should be appointed by P.M.O. (*Hall*), 5465–70, 5507–8, 5652, 5664.—P.M.O. of an army in the field competent to superintend the sanitary condition of the troops (*Hall*), 5445–51.—P.M.O. of divisions should be the sanitary officers (*Airey*),

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3207; (*Hall*), 5339–42, 5400; (*Gibson*), 9255.—Sanitary boards in every camp and garrison desirable (*Dartnell*), 8841–4, 8847.—A.M.O. should be the executive sanitary officers (*Sutherland*), 6581–5, 9500; (*Balfour*), 9583.—Sanitary recommendations of M.O. were not attended to in Bulgaria (*Hall*), 5459.—Were attended to in the Crimea (*Hall*), 5460–4.—Sanitary commissioners in the Crimea effected no good which would not have been done had they not been there (*Hall*), 5452–64.—Objections to statements in their report (*Hall*), 5453–7.—Reply to Sir J. Hall's remarks (*Sutherland*), 9479, 9981.—Unsatisfactory construction and condition of hospitals at Scutari (*Sutherland*), 9479.—Sanitary works carried on by the commissioners, and the results (*Sutherland*), 9479.—Very bad latrines at Scutari a cause of disease (*Rawlinson*), 8509.—Had a strong report of the sanitary defects at Scutari come home, D.G. would have applied to the war minister (*Smith*), 56.—Thinks Dr. Menzies had the knowledge of what was necessary to be done (*Smith*), 59; but was overworked (*Smith*), 57.—Dr. Menzies reported the drains and privies (*Smith*), 57.—Bad sanitary condition of Balaklava (*Sutherland*), 9479.

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M.O. have too much writing and case-taking imposed on them (*Dartnell*), 8697–700.—Necessity for reducing the amount of writing required from M.O. (*Rowdon*), 8904–7.—Registers now in use objectionable (*Maclachlan*), 6076–80, 6106; (*Mouat*), 9092–4.—Of no practical value (*Alexander*), 2543–4.—They are not kept according to the rules laid down (*Maclachlan*), 6101–6.—Their value depends upon the individual reporter (*Mapleton*), 4542–3.—Are of no use in deciding questions of pension (*Maclachlan*), 6069.—Medical registers are necessary (*Mapleton*), 4535–8.—Interesting and important cases only should be entered in them (*Alexander*), 2530–1; (*Brown*), 2883–4, 2891–5; (*Maclachlan*), 6081–94; and cases which may ultimately disqualify for service (*Maclachlan*), 6091.—Registers with clinical remarks a good test of M.O. (*Mouat*), 9692.—A good record book would furnish all the information necessary in most cases (*Alexander*), 2532–7; (*Brown*), 2884–90, 2897, 2904; (*Maclachlan*), 6074, 6107–10; (*Dartnell*), 8701–7; (*Balfour*), 9548.—Simplification of returns would diminish the work of M.O. (*Alexander*), 2529, 2544–9; (*Brown*), 2913–15.—Forms now in use cannot be safely curtailed (*Mapleton*), 4539.—Returns and reports recommended to be kept (*Rowdon*), 8905–6.—Forms of returns at Renkioi might be advantageously used in the army (*Parkes*), 930.—Received daily reports of sickness and mortality from M.O. in the Crimea (*Hall*), 5381.—Inspected part of camp daily (*id.*), 5384.—Great amount of correspondence in the Crimea (*id.*), 5385–6.—To reduce the amount of writing tabulated forms were used (*id.*), 5388.—System might be advantageously extended (*id.*), 5389–92.

A military medical periodical would be very useful (*Parkes*), 800–4.—The most important cases should be published (*Alexander*), 2538–41.—A catalogue of the museum at Chatham is published, but no details of the cases (*Smith*), 23, 24.—No selections from navy medical journals published (*Liddell*), 304–6.—Statistics published periodically (*id.*), 307.—Periodical statistics of the army should be published (*Alexander*), 8981–2.—M.O. are encouraged to publish papers (*Smith*), 176; (*Liddell*), 308–11; but few do so (*Smith*), 176.

M.O. makes up the diet rolls and totals them (*Pratt*), 1153–7.—Daily diet rolls now required (*id.*), 1159–64.—Unnecessary (*Robertson*), 1830.—Weekly preferable to monthly (*id.*), 1831–7.—Extra diet roll supersedes the necessity of many requisitions (*id.*), 1667.—Diets supplied at Scutari at first without diet rolls or requisitions (*id.*), 1669–70.—Diet rolls at Renkioi (*Parkes*), 934–42.—Form of diet rolls at Smyrna very simple (*Meyer*), 989–90.—Diet rolls made up there by ward master (*id.*), 1045, 1535.

Confidential Reports.—Nature of confidential reports (*Taylor*), 8257–62; (*Dartnell*), 8817–21.—Sent to D.G. once a year (*Hall*), 5689.—Made none from the Crimea (*id.*), 5711.—Had no time to do so (*id.*), 5712.—Made reports of individuals, but no general report (*id.*), 5714–16; (*Smith*), 7655–6.—Course pursued with reference to confidential reports (*id.*), 7627–54, 9391–3; (*Dartnell*), 8829–35.—Course pursued by Poor Law Board in Scotland (*McNeill*), 9814–16.—Confidential reports from Chatham (*Taylor*), 2236–7.—Invariably informs an officer of an unfavourable report (*Hall*), 5691, 5710, 5742–5; (*Taylor*), 8251–6, 8264–5; (*Dartnell*), 8822–7.—Thinks this the rule of the service (*Hall*), 5718.—D.G. writes to any M.O. unfavourably reported upon (*id.*), 5692; (*Taylor*), 8266–9.—Confidential reports useful (*id.*), 8249–51.—Necessary (*Hall*), 5694–6, 5740; (*Dartnell*), 8828.—Injurious (*Miss Nightingale*), 10,062.—Should be regulated as in the military branch of the service (*Beatson*), 7908–17; (*Alexander*), 8979.

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Origin of the formation of the statistics of disease and mortality in the army (*Tulloch*), 6330.—Publication of army statistical reports (*id.*), 6467–71.—Mode of preparing them (*id.*), 6495–503.—Advantages of them (*id.*), 6480–6; (*Farr*), 7104–5.—No advantage would arise from the publication of quarterly

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reports (*Tulloch*), 6479.—Precautions necessary to avoid inaccuracy in deductions from statistical reports (*id.*), 6473–5.—Modes of calculating the mortality of hospitals (*Miss Nightingale*), 10,004.—Information necessary for Commander-in-Chief was not furnished to him in the Crimea (*id.*), 10,005.—Subjects on which he should be informed (*id.*), *ib.*—Weekly states as at present given (*id.*), *ib.*—Objections to present nomenclature of diseases in the army returns (*Tulloch*), 6340–6; (*Farr*), 7089–102; (*Balfour*), 9546.—Classification unsatisfactory (*Brown*), 2905–12.—Application of registrar general for returns of soldiers' deaths (*Farr*), 7043–8.—Objects of this (*id.*), 7049–66, 7106–11.—French system of registration (*id.*), 7069–70, 7079.—Navy returns to registrar general, defective (*id.*), 7071–7.—There are no statistical reports in the Indian army (*Arnott*), 8412–14.

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Comparative mortality of army and civil population (*Tulloch*), 6367–84; (*Farr*), 7112–40; (*Miss Nightingale*), 10,005.—Rates of mortality of different trades (*Farr*), 7141–9.—Comparison of mortality of soldiers with that of various classes of the civil population in England (*Neison*), 9269–316.—Pay of soldiers compared with wages of labouring classes (*Tulloch*), 6509–10.—Mortality of army pensioners (*id.*), 6391–2.—Expense of raising soldiers (*id.*), 6506–8.—Reduction of mortality diminishes the expense of keeping up the army (*id.*), 6504–7.—Mortality of the army seems everywhere to exceed that of civil population (*id.*), 6356; (*Neison*), 9383, 9387.—Mortality of Sepoys less than of civil population (*id.*), 9344–50, 9376–9.—Mortality of various descriptions of native troops in India (*id.*), 9351–3.—Mortality of European officers in India (*id.*), 9355–72.—Comparative mortality of other armies (*Tulloch*), 6358–65.—Mortality in the army might be diminished by appropriate sanitary arrangements (*id.*), 6306–8, 6435.—Reduced mortality in the army since 1837 resulting from sanitary changes (*id.*), 6282–302.—Soldiers are picked lives by recruiting and invaliding (*Neison*), 9261–7.—System of examination of recruits (*Smith*), 7657–66.

Causes of high rate of mortality among soldiers (*Jebb*), 5227–33, 5248; (*Tulloch*), 6304, 6398–434, 6439–60; (*Dartnell*), 8675–93.—Causes of high mortality in the Guards (*Balfour*), 9561–80.—Crowding in barracks and hospitals the chief cause of the high mortality in the army at home (*McNeill*), 9970–7.—The cavalry have more space and less mortality than the infantry (*id.*), 9973.—Night duty a prominent cause of mortality (*Lindsay*), 5888; (*McNeill*), 9978.—Constant recurrence of night duty injurious to health (*Lawrence*), 4201; (*Childs*), 6992–6, 7019–22.—Amount of night duty in the Guards (*Lindsay*), 5891–907.—Varies greatly in the Line (*id.*), 5901.—Mode of doing night duty (*id.*), 5909–11.—Ophthalmia in a great measure attributable to defective ventilation (*Dartnell*), 8681.—Reduced in the Royals by encamping (*id.*), 8682–5.—Defective ventilation a cause of fever (*Balfour*), 9551.—Does not think ventilation has much to do with mortality (*Neison*), 9297.—Attributes the excessive mortality from diseases of the lungs in the army to the want of a due amount of proper exercise (*id.*), 9335–42.—Influence of exercise on mortality (*id.*), 9296–305, 9316.—Influence of intemperance (*id.*), 9317–28.—Drunkenness the chief cause of crime in the army (*Jebb*), 5239.—Ennui of a soldier's life (*Lindsay*), 5851, 5865–74.—Routine of a soldier's life in London (*id.*), 5852–6.—Difference between the work of a soldier and a civilian (*id.*), 5859.—Influence of colonial service on mortality of army at home (*Balfour*), 9576.

Principal causes of diseases in tropical climates (*Martin*), 3339–43.—Health of Bombay army (*Arnott*), 8600.—Causes of sickness among European troops in India (*id.*), 8514–21.—Sentry duty at night chiefly done by Sepoy (*id.*), 8530–8.—The stations of troops in tropical climates may be improved by sanitary measures (*Martin*), 3345.—Elevated positions advantageous (*id.*), 3355–6.—Sanatoria in India (*Arnott*), 8566–9.—Sea voyage, or residence on sea board, useful (*Martin*), 3354.—The dress of the troops in India requires improvement (*Arnott*), 8546–59.—Service in East Indies should be shortened (*Tulloch*), 6487–91.—Objections to the system of volunteering in India (*id.*), 6492–4.—There was a good deal of malingering in the Peninsular war (*McNeill*), 9867.—Very little in the Crimean war (*id.*), 9868–9.—Latterly a great deal of malingering at Scutari (*Rowdon*), 8626–8.—Very little at Renkioi (*Parkes*), 948.

Mortality in the Crimea during the first and last six months of campaign (*Miss Nightingale*), 9995.—Contrasted with mortality at home (*id.*), *ib.*—Deaths and causes of them in January 1855 in the Crimea (*id.*), 10,005.—The deaths in the field hospitals give no just idea of the mortality of an army unless combined with those in the G.H. at the base of operations (*id.*), *ib.*—Transport of sick from the Crimea to Scutari; deaths on the passage (*id.*), 10,002.—Space allowed on board transports (*id.*), *ib.*

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City.—Statistics of (*Childs*), 6833–78.—Sickness greater than in the cavalry (*id.*), 6979–80.—Duty more severe (*id.*), 6981.—Day and night duty (*id.*), 6982–90.—Sickness greater among night than day-men (*id.*), 6992–6.—Resignations from bad health greater among night-men (*id.*), 6992–6.—Night duty less laborious (*id.*), 7008–11.—Average service of the men four years (*id.*), 7026.—Rules as to discharge (*id.*), 7027–34.—Numbers pensioned (*id.*), 7038–9.

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INVALIDING.

Out-Pensioners.—Constitution of the Chelsea Board (*Moorhead*), 5984–87.—Mode of discharging invalid soldiers at home (*id.*), 5988–6002; (*Maclachlan*) 6115–16.—In the colonies (*Moorhead*), 6042–46.—Number discharged annually by the Chelsea Board (*id.*), 6004–6009.—Mode of paying pensioners abroad (*id.*), 6003.—Examination of invalids at Chatham (*Maclachlan*), 6060–67.—Has a veto on the discharge of invalids, but does not exercise it (*id.*), 6163.—Attendance of men above 21 years' service might be dispensed with (*Moorhead*), 6016–18, 6048; (*Maclachlan*), 6112.—And of certain cases of disability under that length of service (*id.*), 6112–13, 6117–24.—The Chelsea Board decides if men have any claim to pension (*Moorhead*), 6006–8.—Difficulty in deciding claims, from medical reports not being sufficiently explicit in cases of accidents (*id.*), 6013–15, 6050–52.—Some of the short-service pensioners might revert to the army (*Tulloch*), 6166–70.—(*See* also RETURNS, REPORTS, &c.)

In-Pensioners.—Number of in-pensioners of Chelsea Hospital (*Moorhead*), 6024.—Mode of filling up vacancies (*id.*), 6025–31, 6037.—May leave the house when they please (*id.*), 6032.—Number who leave annually (6013).—Number dismissed for misconduct (*id.*), 6035.—Age, service, and rate of pension of present in-pensioners (*id.*), 6033.—Their rations (*id.*), 6053.—Cost of keep (*id.*), 6054–8.—Mortality of in-pensioners (*Maclachlan*), 6125–27.—Medical staff of Chelsea Hospital (*id.*), 6144–52.—Female nursing in the infirmary (*id.*), 6153–60.

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Medical department should have separate transport in the field (*Robertson*), 1656–61; (*Alexander*), 2621, 2627–49.—And a certain allowance without requisition (*id.*), 2621–4, 2655–6.—Necessity for this in the Crimea (*id.*), 2625–6, 2648–54, 2657.—Instance at the Cape (*id.*), 2632.—Mode of transport at the Cape (*Hall*), 5291.—At Sebastopol (*id.*), 5294–6.—Lord Raglan ordered 12 waggons to be taken to the Crimea (*id.*), 5366.—Ten were relanded by a staff officer after Lord Raglan had sailed (*id.*), 5366, 5564–6.—Two reached the Crimea but without horses or mules (*id.*), 5367–9.—Arrangements as to transport in the Crimea (*id.*), 5395–6.—P. M. O. should have transport furnished on his own requisition (*id.*), 5393.—Various means of transport—cacolets, waggons, litiers, &c. (*id.*), 5302–7.—French ambulance system (*id.*), 5297–9.—System of transport for sick (*McNeill*), 9947.

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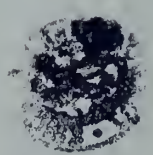

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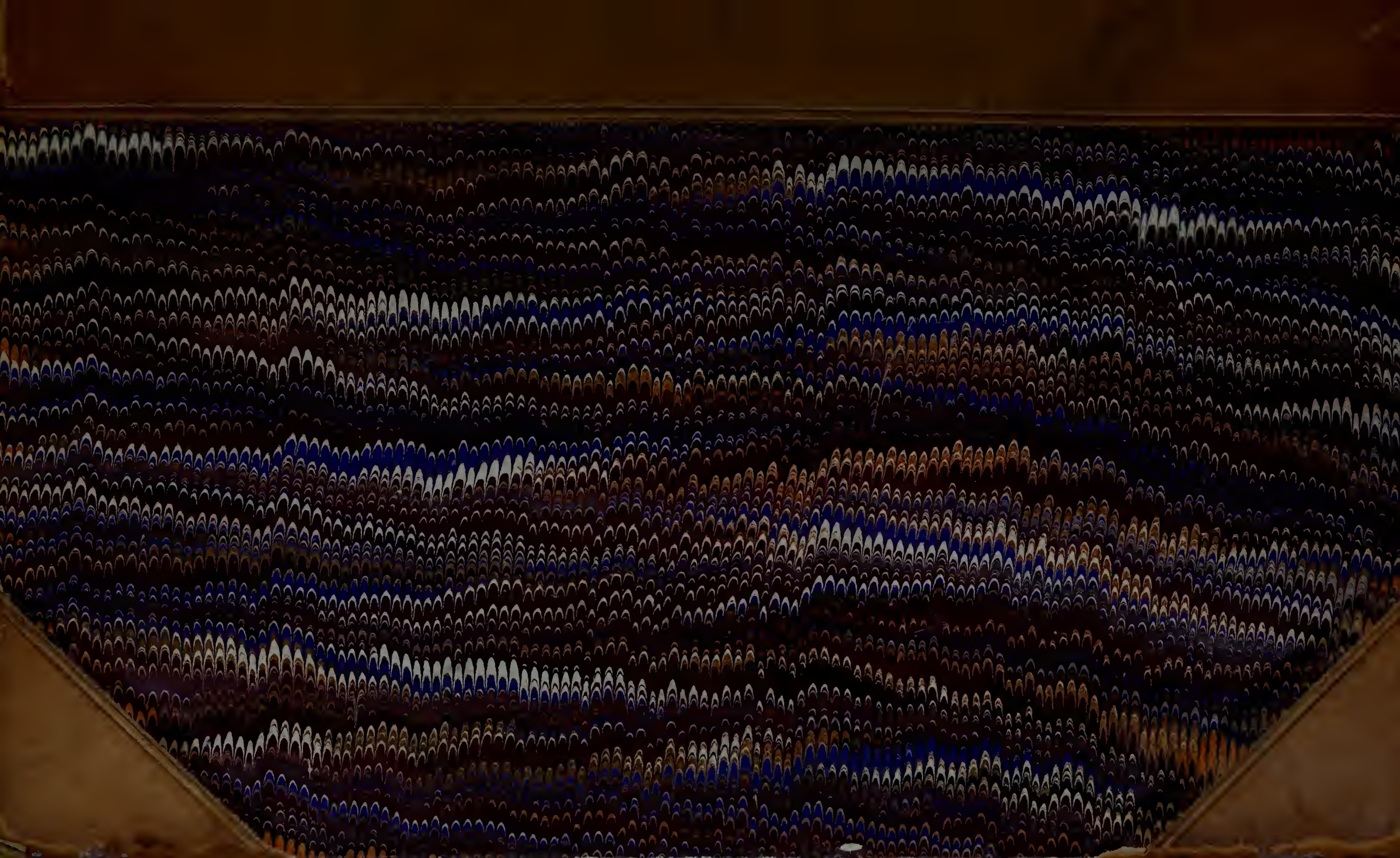
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